MITSUBISHI

Mitsubishi Programmable Controller

CC-Link–AnyWire DB A20 Bridge Module User's Manual

Powered by Anywire

This product was jointly developed and manufactured by Mitsubishi and Anywire Corporation.

*Note that the warranty on this product differs from that on other programmable controller products. (Refer to "WARRANTY" in this manual.)

AnyWire DB A20

MODEL

-NZ2AW1C2D2

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PRECAUTIONS REGARDING WARRANTY AND SPECIFICATIONS

The NZ2AW1C2D2 is jointly developed and manufactured by Mitsubishi and Anywire Corporation.
Note that there are some precautions regarding warranty and specifications of this product.

<Warranty>

Item	NZ2AW1C2D2	Other programmable controller products (e.g. MELSEC-Q series)
Repair term after discontinuation of production	1 year	7 years

<Application of the EMC Directive>

Item	NZ2AW1C2D2	Other programmable controller products (e.g. MELSEC-Q series)
Applicable EMC standard	Not applied	EN61131-2

<Application of the UL/cUL standards>

Item	NZ2AW1C2D2	Other programmable controller products (e.g. MELSEC-Q series)
Applicable UL standard/cUL standard	Not applied	UL508 CSA22.2

●SAFETY PRECAUTIONS●

(Read these precautions before using this product.)

Before using this product, please read this manual and the relevant manuals carefully and pay full attention to safety to handle the product correctly.
The precautions given in this manual are concerned with this product only. For the safety precautions of the programmable controller system, refer to the user's manual for the CPU module used.

In this manual, the safety precautions are classified into two levels: "⚠ WARNING" and "⚠ CAUTION".

⚠WARNING	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
⚠CAUTION	Indicates that incorrect handling may cause hazardous conditions, resulting in minor or moderate injury or property damage.

Under some circumstances, failure to observe the precautions given under "⚠ CAUTION" may lead to serious consequences.
Observe the precautions of both levels because they are important for personal and system safety.

Make sure that the end users read this manual and then keep the manual in a safe place for future reference.

[Design Precautions]

⚠ WARNING

- An AnyWire DB A20 system has no control function for ensuring safety.
- When a communication failure occurs in the network, data in the master module are held. Check the communication status information and configure an interlock circuit in the sequence program to ensure that the entire system will operate safely.

[Design Precautions]

⚠ CAUTION

- Do not install the control lines or communication cables together with the main circuit lines or power cables. Keep a distance of 100mm or more between them. Failure to do so may result in malfunction due to noise.
- Configure safety circuits, such as an emergency stop circuit and interlock circuit, external to the AnyWire DB A20 system.

[Installation Precautions]

⚠ CAUTION

- Use the module in an environment that meets the general specifications in this manual. Failure to do so may result in electric shock, fire, malfunction, or damage to or deterioration of the product.
- Securely fix the module with a DIN rail.
- Do not directly touch any conductive parts or electronic components of the module. Doing so can cause malfunction or failure of the module.

[Wiring Precautions]

⚠ CAUTION

- Shut off the external power supply for the system in all phases before wiring. Failure to do so may result in electric shock or cause the module to fail or malfunction.
- Ground the FG terminals to the protective ground conductor dedicated to the programmable controller. Failure to do so may result in electric shock or malfunction.
- Check the rated voltage and terminal layout before wiring to the module, and connect the cables correctly. Connecting a power supply with a different voltage rating or incorrect wiring may cause a fire or failure.
- Tighten the terminal screw within the specified torque range.
  Undertightening can cause short circuit, fire or malfunction.
  Overtightening can damage the screw and/or module, resulting in drop, short circuit, or malfunction.
- Prevent foreign matter such as dust or wire chips from entering the module.
  Such foreign matter can cause a fire, failure, or malfunction.
- Incorrect wiring may damage modules and external devices. Adjust a cable length and a module position to prevent disconnection of a connector or a cable.
- Do not solder stranded wires of a cable when connecting them to the terminal block. Doing so may cause poor contact.
- The power supply voltage of remote slave modules may be insufficient due to a voltage drop in the power supply line. Connect an external power supply so that the voltage of remote slave modules is ensured.
- Do not apply the 24VDC power before wiring the entire AnyWire DB A20 system.
- Use 24VDC stabilized power supplies for devices in the AnyWire DB A20 system.
- Do not install the control lines or communication cables together with the main circuit lines or power cables.
  Failure to do so may result in malfunction due to noise.

[Wiring Precautions]

⚠ CAUTION

- Make sure to place the communication and power cables to be connected to the module in a duct or fasten them using a clamp. If the cables are not placed in a duct or fastened with a clamp, their positions may be unstable or moved, and they may be pulled inadvertently.
  This may damage the module and the cables or cause the module to malfunction because of faulty cable connections.
- When disconnecting the communication and power cables from the module, do not pull the cables by hand. When disconnecting a cable with a connector, hold the connector to the module by hand and pull it out to remove the cable. When disconnecting a cable connected to a terminal block, loosen the screws on the terminal block first before removing the cable. If a cable is pulled while being connected to the module, it may cause the module to malfunction or damage the module and the cable.

[Startup and Maintenance Precautions]

⚠ WARNING

- Do not touch any terminal while power is on. Doing so will cause electric shock or malfunction.
- Shut off the external power supply (all phases) used in the system before cleaning the module or retightening the terminal screws or module fixing screws.
  Failure to do so may result in electric shock.
  Undertightening the terminal screws can cause short circuit or malfunction.
  Overtightening can damage the screw and/or module, resulting in drop, short circuit, or malfunction.

[Startup and Maintenance Precautions]

⚠ CAUTION

- Do not disassemble or modify the modules.
  Doing so may cause failure, malfunction, injury, or a fire.
- Shut off the external power supply (all phases) used in the system before mounting or removing a module.
  Failure to do so may cause the module to fail or malfunction.
- After the first use of the product, do not mount/remove the terminal block to/from the module more than 50 times (IEC 61131-2 compliant).
  Exceeding the limit may cause malfunction.
- Before handling the module, touch a grounded metal object to discharge the static electricity from the human body.
  Failure to do so may cause the module to fail or malfunction.

[Disposal Precautions]

⚠ CAUTION

- When disposing of this product, treat it as industrial waste.

●CONDITIONS OF USE FOR THE PRODUCT●

(1) Mitsubishi programmable controller ("the PRODUCT") shall be used in conditions;
i) where any problem, fault or failure occurring in the PRODUCT, if any, shall not lead to any major or serious accident; and
ii) where the backup and fail-safe function are systematically or automatically provided outside of the PRODUCT for the case of any problem, fault or failure occurring in the PRODUCT.

(2) The PRODUCT has been designed and manufactured for the purpose of being used in general industries.
MITSUBISHI SHALL HAVE NO RESPONSIBILITY OR LIABILITY (INCLUDING, BUT NOT LIMITED TO ANY AND ALL RESPONSIBILITY OR LIABILITY BASED ON CONTRACT, WARRANTY, TORT, PRODUCT LIABILITY) FOR ANY INJURY OR DEATH TO PERSONS OR LOSS OR DAMAGE TO PROPERTY CAUSED BY the PRODUCT THAT ARE OPERATED OR USED IN APPLICATION NOT INTENDED OR EXCLUDED BY INSTRUCTIONS, PRECAUTIONS, OR WARNING CONTAINED IN MITSUBISHI'S USER, INSTRUCTION AND/OR SAFETY MANUALS, TECHNICAL BULLETINS AND GUIDELINES FOR the PRODUCT.
("Prohibited Application")
Prohibited Applications include, but not limited to, the use of the PRODUCT in;
- Nuclear Power Plants and any other power plants operated by Power companies, and/or any other cases in which the public could be affected if any problem or fault occurs in the PRODUCT.
- Railway companies or Public service purposes, and/or any other cases in which establishment of a special quality assurance system is required by the Purchaser or End User.
- Aircraft or Aerospace, Medical applications, Train equipment, transport equipment such as Elevator and Escalator, Incineration and Fuel devices, Vehicles, Manned transportation, Equipment for Recreation and Amusement, and Safety devices, handling of Nuclear or Hazardous Materials or Chemicals, Mining and Drilling, and/or other applications where there is a significant risk of injury to the public or property.

Notwithstanding the above, restrictions Mitsubishi may in its sole discretion, authorize use of the PRODUCT in one or more of the Prohibited Applications, provided that the usage of the PRODUCT is limited only for the specific applications agreed to by Mitsubishi and provided further that no special quality assurance or fail-safe, redundant or other safety features which exceed the general specifications of the PRODUCTs are required. For details, please contact the Mitsubishi representative in your region.

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TERMS

Unless otherwise specified, this manual uses the following terms.

Term	Description
NZ2AW1C2D2	The abbreviation for the CC-Link–AnyWire DB A20 bridge module, NZ2AW1C2D2
Intelligent function module	A Q-series module other than CPU modules, power supply modules, and I/O modules, which is mounted on a base unit
Master module	A module that controls a data link system. One master module is required for one system.
Remote I/O module	A module that communicates I/O data with a master module
Programming tool	A generic term for GX Works2 and GX Developer
GX Works2	The product name of the software package for the MELSEC programmable controllers
GX Developer	
AnyWire DB A20	An original transmission system provided by Anywire Corporation. The full-duplex transmission mode enables a high-speed and long-distance communication. This system provides a high-speed and highly-reliable sensor network.
Slave module	A generic term for modules that communicate data with a master module
Terminating resistor	A waveform shaper
Transmission cycle time	A data sampling interval
Buffer memory	A memory in an intelligent function module, where data (such as setting values and monitoring values) exchanged with a CPU module are stored
RX	Remote input (for CC-Link) Information input in bit units from the slave station to the master station.
RY	Remote output (for CC-Link) Information output in bit units from the master station to the slave station.
RWw	Remote register (Write area for CC-Link) Information output in 16-bit units from the master station to the slave station.
RWr	Remote register (Read area for CC-Link) Information input in 16-bit units from the slave station to the master station.

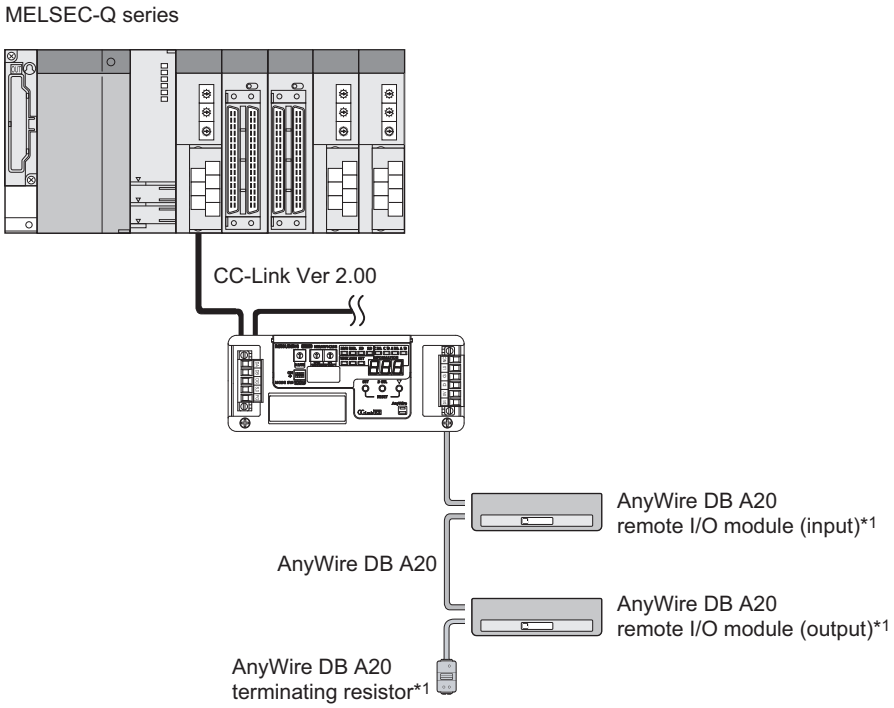
CHAPTER 1 OVERVIEW

This manual describes the specifications, part names, and settings of the NZ2AW1C2D2 CC-Link–AnyWire DB A20 bridge module (hereafter abbreviated as the NZ2AW1C2D2) used as a remote device station in the CC-Link Ver 2.00 system.

This module, a product of the joint development project with Anywire Corporation, allows the AnyWire DB A20 system to connect with CC-Link.
The AnyWire DB A20 system provides a high-speed and highly reliable sensor network system.

<Features of the NZ2AW1C2D2>

The NZ2AW1C2D2 is a bridge module used for the connection between AnyWire DB A20 having the full-duplex transmission mode and CC-Link Ver 2.00.
The transmission distance can be selected from 50m, 200m, 1km, and 3km using the dip switch.
Disconnections can be detected even when the wiring is branched.
Up to 512 remote input points and 512 remote output points can be connected to one NZ2AW1C2D2 module.



*1: Manufactured by Anywire Corporation

Memo

CHAPTER 2 SPECIFICATIONS

2.1 General Specifications

Item	Specifications					
Operating ambient temperature	0 to 55°C					
Storage ambient temperature	-25 to 75°C					
Operating ambient humidity	10 to 90%RH, non-condensing					
Storage ambient humidity	10 to 90%RH, non-condensing					
Vibration resistance	Compliant with JIS B 3502 and IEC 61131-2*5		Frequency	Constant acceleration	Half amplitude	The number of sweeps
		Under intermittent vibration	5 to 9Hz	—	3.5mm	10 times each in X, Y, and Z directions
			9 to 150Hz	9.8m/s^2	—	
		Under continuous vibration	5 to 9Hz	—	1.75mm	—
			9 to 150Hz	4.9m/s^2	—	
Shock resistance*5	Compliant with JIS B 3502 and IEC 61131-2 (147m/s^2, 3 times each in X, Y, and Z directions)					
Operating atmosphere	No corrosive gas					
Operating altitude*4	2000m or less					
Installation location	Inside a control panel*3					
Overvoltage category*1	II or less					
Pollution degree*2	2 or less					

*1 This indicates the section of the power supply to which the equipment is assumed to be connected between the public electrical power distribution network and the machinery within premises.
Category II applies to equipment for which electrical power is supplied from fixed facilities.
The surge voltage withstand level for up to the rated voltage of 300V is 2500V.

*2 This index indicates the degree to which conductive material is generated in terms of the environment in which the equipment is used.
At the pollution degree 2, only non-conductive pollution occurs. A temporary conductivity caused by an accidental condensation may also occur occasionally.

*3 The equipment can also be used outside the control panel, provided that environmental conditions such as operating ambient temperature and operating ambient humidity are met.

*4 Do not use or store the programmable controller under pressure higher than the atmospheric pressure of altitude 0m. Doing so may cause malfunction.
When using the programmable controller under pressure, please consult your local Mitsubishi representative.

*5 To comply with IEC 61131-2 (2007 edition), the output frequency range is as shown below.
- Under intermittent vibration: 5 to 8.4Hz, 8.4Hz to 150Hz
- Under continuous vibration: 5 to 8.4Hz, 8.4Hz to 150Hz

2.2 Performance Specifications

2.2.1 Performance specifications

Classification	Item	Specifications			
CC-Link side	Station type	Remote device station			
	CC-Link version	Ver. 2.00			
	Extended cyclic settings	Double			
	Communication speed	10M/5M/2.5M/625K/156Kbps (switching by the transmission speed setting switch)			
	No. of occupied stations of CC-Link	4 stations (RX/RY number of occupied points: 224 points for each) (RWr/RWw 32/32)			
	No. of connectable modules	Up to 16			
	Connection location of the NZ2AW1C2D2	No restriction			
	Connection cable*1	CC-Link dedicated cable/High-performance CC-Link dedicated cable/ Ver.1.10- compatible CC-Link dedicated cable			
AnyWire DB A20 side	Transmission clock	125kHz	31.3kHz	7.8kHz	2kHz
	Maximum transmission distance (total length)	50m	200m	1km	3km
	No. of connectable modules	Up to 128	Up to 128	Up to 128	Up to 32*2
	Transmission system	Total Frame Cyclic method with double-duplex mode			
	Connection type	Bus topology (Multidrop system, T-branch system, tree branch system)			
	Transmission protocol	Dedicated protocol (AnyWire DB A20)			
	Error control	Double-check system			
	No. of connected I/O points	Up to 1024 points (512 input points/512 output points)			
	RAS function	Disconnected transmission line location detection function, transmission line short detection function, transmission line voltage drop detection function			
	Connection cable	• General-purpose 2-/4-wire cable (VCTF, VCF 0.75 to 1.25mm^2, rated temperature 60°C) • General-purpose wire (0.75 to 1.25mm^2, rated temperature 60°C) • Dedicated flat cable (0.75mm^2, rated temperature 70°C) (When the transmission distance exceeds 200m, use wires with a diameter of 0.9 to 1.25mm^2.)			
	Maximum no. of writes to EEPROM	Up to 100000 times			
Common	Power supply	Voltage 21.6 to 27.6VDC (24VDC -10% to +15%), Ripple 0.5Vp-p or less Current 0.4 [A] (When 128 slave modules are connected and the load current is not included)			
	External dimensions	57mm (H) × 140mm (W) × 44mm (D)			
	Weight	0.18kg			

*1 Ver.1.10- compatible CC-Link dedicated cable, CC-Link dedicated cable (Ver.1.00), and high-performance CC-Link dedicated cable cannot be used at the same time. If those cables are used at the same time, normal transmission is not guaranteed.
In addition, use the terminating resistor according to the type of cable used.

*2 Up to 64 modules can be connected within 2km.

2.2.2 Power supply sequence and handling of I/O data

An incorrect input/output may occur depending on the procedure for supplying the power to the NZ2AW1C2D2 and the slave module. Pay attention to the following points.

- After the NZ2AW1C2D2 is turned on, do not make the access related to this module until the remote station's READY signal (RX(n+D)B) turns on.
- Supply the power according to the steps below.
  (1) Turn on the programmable controller (CC-Link master module).
  (2) Turn on the bridge module (NZ2AW1C2D2).
  (3) Turn on the slave module (when the power supply is only for the slave module).
  (4) Before accessing the slave module, turn on the error reset request flag (for 500ms or longer) and turn it off.

2.3 Applicable System

2.3.1 Applicable master module

Master modules that can be used are listed on the website of CC-Link Partner Association (CLPA).
Refer to the following URL for the website of CC-Link Partner Association (CLPA).
http://www.cc-link.org/

2.3.2 Applicable CC-Link version

The combination of the master module of CC-Link and the network parameter of a programming tool is shown in the following table.

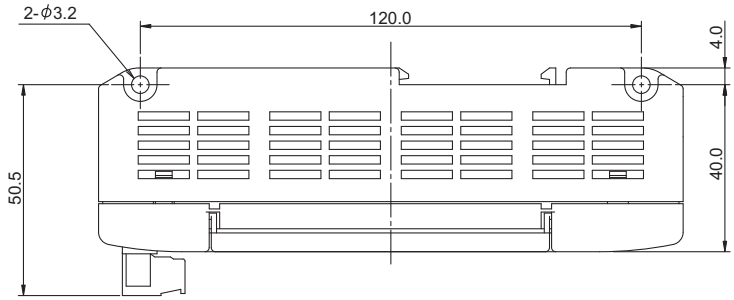
Master module	Network parameter setting of a programming tool		NZ2AW1C2D2
	Mode setting	Station information (station type)	
QJ61BT11 AJ61BT11 A1SJ61BT11 AJ61QBT11 A1SJ61QBT11	Remote network-Ver.1 mode	Remote device station	×
	Remote network-Ver.2 mode	Ver.1 remote device station	×
		Ver.2 remote device station	×
	Remote network-addition mode	Ver.1 remote device station	×
		Ver.2 remote device station	×
	Remote I/O network mode	—	×
QJ61BT11N L26CPU-BT LJ61BT11	Remote network-Ver.1 mode	Remote device station	×
	Remote network-Ver.2 mode	Ver.1 remote device station	×
		Ver.2 remote device station	○
	Remote network-addition mode	Ver.1 remote device station	×
		Ver.2 remote device station	○*1
	Remote I/O network mode	—	×

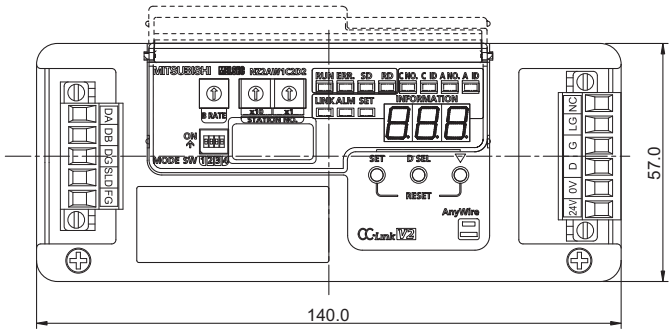
*1 Specify the station number of the additional "Ver.2 remote device station" after the station numbers used in the existing system.

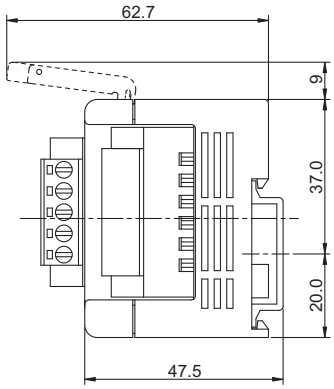
2.3.3 CC-Link dedicated instruction

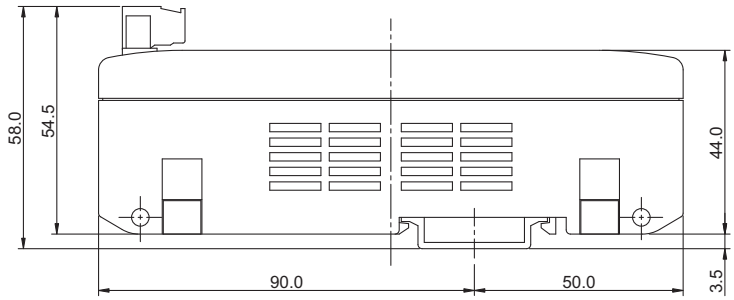
In the NZ2AW1C2D2, dedicated instructions accessing the NZ2AW1C2D2 from a CC-Link master module cannot be used.

2.4 External Dimensions



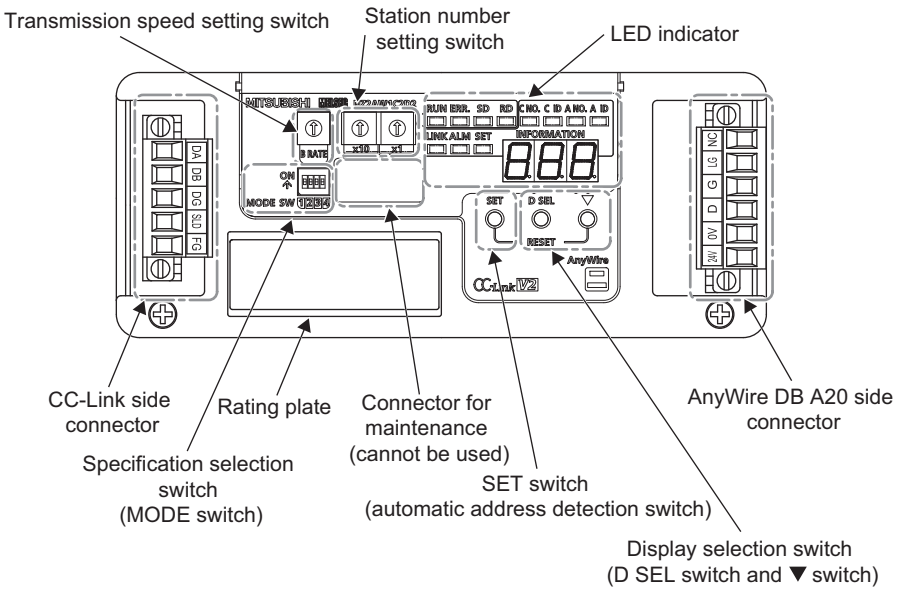






(Unit: mm)

2.5 Part Names


Transmission speed setting switch
Station number setting switch
LED indicator
CC-Link side connector
Rating plate
Connector for maintenance (cannot be used)
AnyWire DB A20 side connector
Specification selection switch (MODE switch)
SET switch (automatic address detection switch)
Display selection switch (D SEL switch and ▼ switch)

For details on each part, refer to the following.

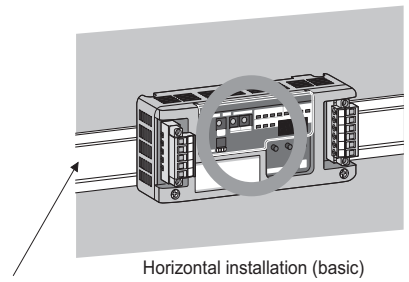
- CC-Link side connector : ☞ Page 20, Section 4.1
- AnyWire DB A20 side connector : ☞ Page 22, Section 4.2
- Station number setting switch : ☞ Page 25, Section 5.1 (1)
- Transmission speed setting switch : ☞ Page 26, Section 5.1 (2)
- Specification selection switch : ☞ Page 27, Section 5.2 (1)
- Reset operation : ☞ Page 28, Section 5.3
- SET switch : ☞ Page 41, Section 9.1
- LED indicator : ☞ Page 38, Section 8.1 (1), Page 39, Section 8.1 (2)
- Display selection switch : ☞ Page 40, Section 8.1 (3)

CHAPTER 3 MODULE MOUNTING

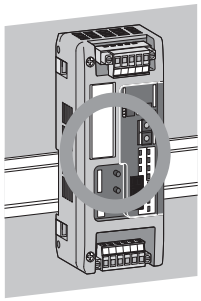
Mount this module on a DIN rail before use.
The module can be mounted in horizontal or vertical orientation.

3.1 Module Mounting Orientation

Since the NZ2AW1C2D2 radiates heat, place it in an airy place in the orientations shown below.

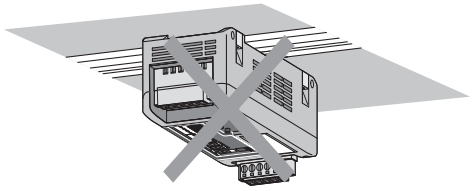


Horizontal installation (basic)

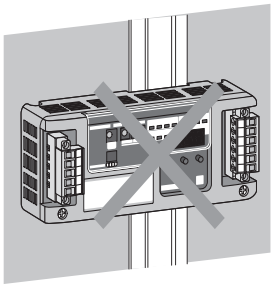


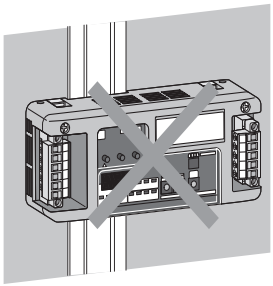
Vertical installation (basic)

Do not place the module as shown below.

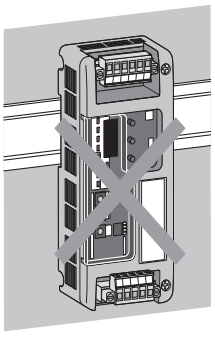


Downward installation

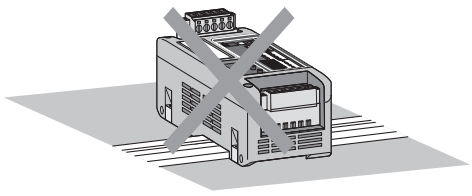




Horizontal installation



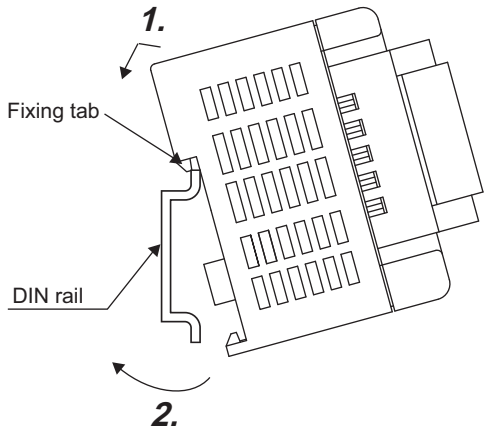
Vertical installation
(upside down)



Upward installation

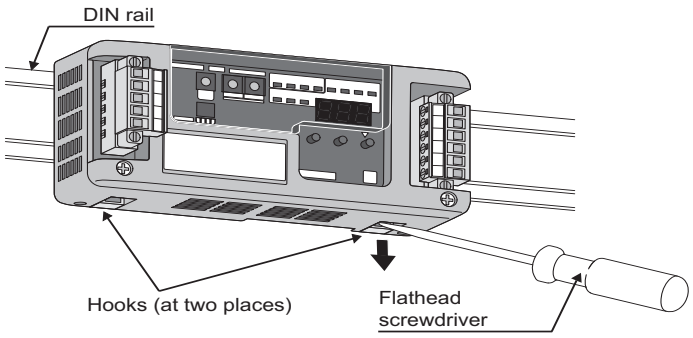
3.2 Mounting in Horizontal Orientation

(1) Mounting on a DIN rail

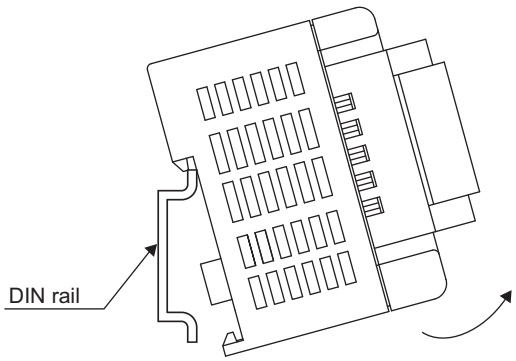


1. **Hook the upper fixing tab on the bottom of the module to the DIN rail.**
2. **Push and engage the NZ2AW1C2D2 in the DIN rail.**

(2) Removing from a DIN rail



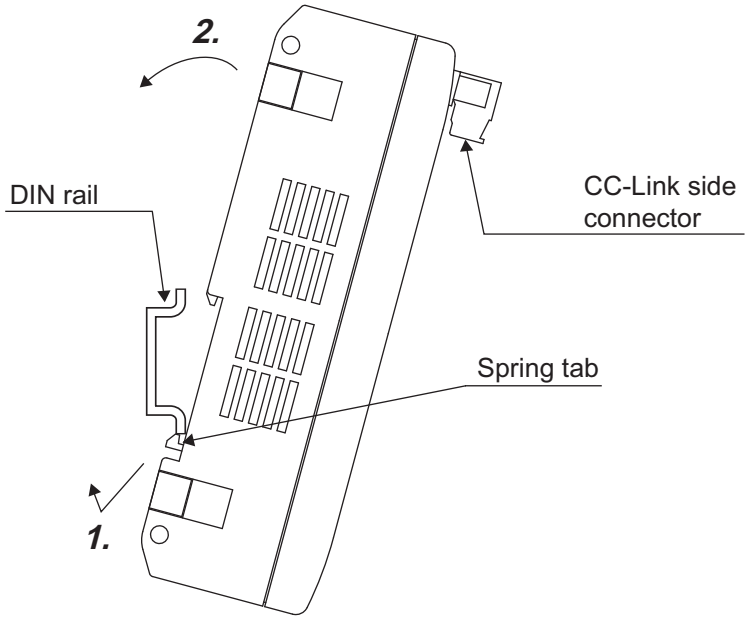
1. **Insert a flathead screwdriver into the hook shown on the left and pull the hook downward to remove from the DIN rail (two hooks).**



2. **Lift the module on the hook side and remove it using the fixing tab as the supporting point.**

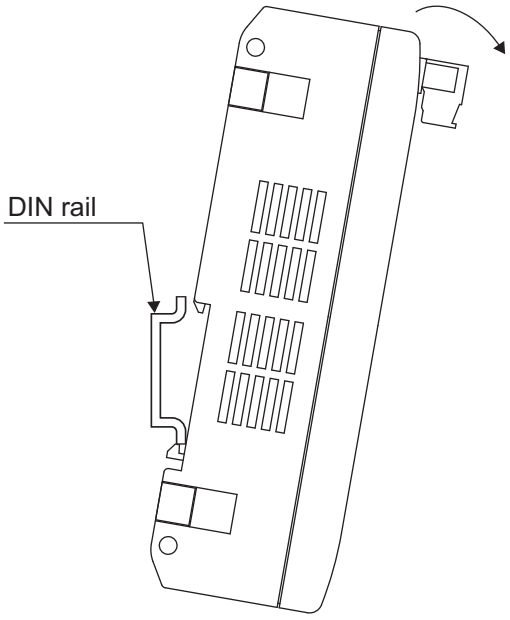
3.3 Mounting in Vertical Orientation

(1) Mounting on a DIN rail



1. **Hook the lower spring tab on the bottom of the module to the DIN rail.**
2. **Push and engage the NZ2AW1C2D2 in the DIN rail.**

(2) Removing from a DIN rail



1. **Pull the upper side of the NZ2AW1C2D2 to remove it from the DIN rail.**

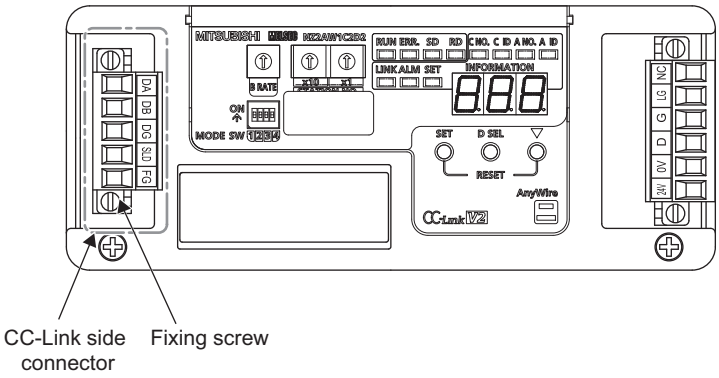
Point

Wen mounting the NZ2AW1C2D2 vertically, do not mount it in reverse orientation (with the CC-Link side connector placed down).
Doing so may cause the module to come off from the DIN rail due to vibration or other reasons.

CHAPTER 4 CONNECTIONS

4.1 CC-Link Side Connector

The NZ2AW1C2D2 is handled as a remote device station on CC-Link. The CC-Link side connector is the connection terminal which is easy to be connected/disconnected.



Manufacturer : Phoenix Contact Co., Ltd. (Contact: http://www.phoenixcontact.com/)
Model : MSTB2,5/5-STF-5.08AU
Tightening torque : 0.5 to 0.6N•m

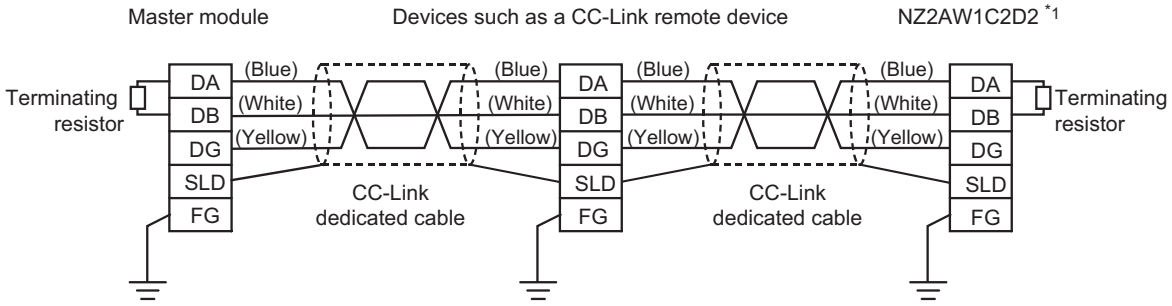
To tighten the connector, a flathead screwdriver having a tip of 0.6 × 3.5mm is required.
Before removing the CC-Link side connector, check that the fixing screws on both sides are completely loosened (removed from the socket).
Pulling with excessive force while the fixing screws on both sides are still tightened may cause damage to the devices.
Check that there are no short circuits due to disconnected or frayed wires before connecting the connector, then tighten the screws on both sides securely. (Tightening torque: 0.5 to 0.6N•m)

Point

The fixing screws are not tightened when shipped. Securely tighten the screws on both sides when connecting the connector.

4.1.1 Connecting a CC-Link dedicated cable

The connection example of the CC-Link dedicated cable is shown below.



*1 SLD and FG are connected inside the module.

When the NZ2AW1C2D2 is the last station, mount a terminating resistor between DA and DB.
Users need to process the terminating resistor to be mounted on the NZ2AW1C2D2. Refer to the catalogue or website of Phoenix Contact Co., Ltd.
If the terminating resistor is not mounted, communication on the CC-Link side may fail.

4.1.2 Cable processing

Bare cables can be connected to the CC-Link side connector; however, for safety reasons, it is recommended to connect the crimped bar terminals.
Recommended manufacturer: Phoenix Contact Co., Ltd.

[Reference example of the bar terminal]

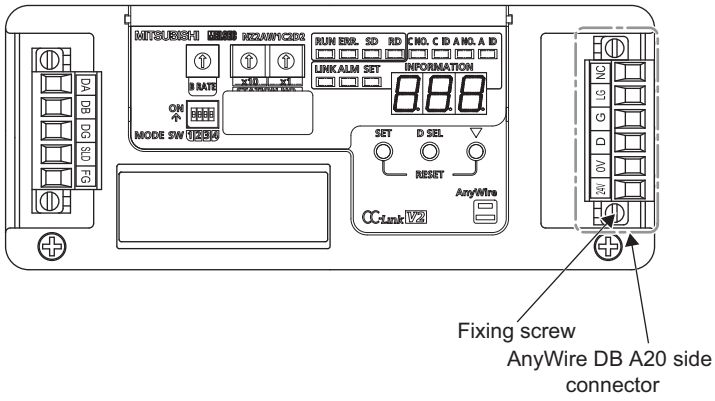
When processing a 0.75mm^2 cable : Model AI0.75-8GY

When processing two 1.25mm^2 cables : Model AI-TWIN2 × 0.75-8GY

When connecting two cables to one terminal, connect the two cables together to the TWIN bar terminal.
For details on sizes other than those described above and crimping tools, refer to the catalogue or website of Phoenix Contact Co., Ltd.

4.2 AnyWire DB A20 Side Connector

The AnyWire DB A20 side connector is the connection terminal which is easy to be connected/disconnected.



Manufacturer : Phoenix Contact Co., Ltd. (Contact: http://www.phoenixcontact.com/)
Model : MSTBT2.5/6-STF-5.08
Tightening torque : 0.5 to 0.6N•m

To tighten the connector, a flathead screwdriver having a tip of 0.6 × 3.5mm is required.
Before removing the AnyWire DB A20 side connector, check that the fixing screws on both sides are completely loosened (removed from the socket).
Pulling with excessive force while the fixing screws on both sides are still tightened may cause damage to the devices.
Check that there are no short circuits due to disconnected or frayed wires before connecting the connector, then tighten the screws on both sides securely. (Tightening torque: 0.5 to 0.6N•m)

Point

The fixing screws are not tightened when shipped. Securely tighten the screws on both sides when connecting the connector.

4.2.1 Description of terminals of the AnyWire DB A20 side connector

Terminal	Description
D	AnyWire DB A20 transmission signal terminal D: Transmission line (+), G: Transmission line (-) Connect to the D and G terminals on the slave module or terminating resistor.
G	
24V	Power supply for the NZ2AW1C2D2.
0V	
LG	Connect to the neutral point of the noise filter inserted between the 24V and 0V terminals. Ground the LG terminal with the FG terminal on the CC-Link side at a single point.
NC	Do not connect anything to this terminal.

4.2.2 Cable processing

Bare cables can be connected to the AnyWire DB A20 side connector; however, for safety reasons, it is recommended to connect the crimped bar terminals.
Recommended manufacturer: Phoenix Contact Co., Ltd.

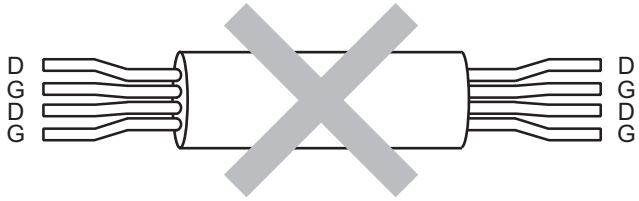
[Reference example of the bar terminal]

When processing a 0.75mm^2 cable	: Model AI0.75-8GY
When processing a 1.25mm^2 cable	: Model AI1.5-8 BK and others
When processing two 0.75mm^2 cables	: Model AI-TWIN2 × 0.75-8GY
When processing two 1.25mm^2 cables	: Model AI-TWIN2 × 1.5-8 BK and others

When connecting two cables to one terminal, connect the two cables together to the TWIN bar terminal.
When TWIN bar terminals are used for these transmission line connectors, the maximum line diameter is 1.25mm^2.
For details on sizes other than those described above and crimping tools, refer to the catalogue or website of Phoenix Contact Co., Ltd.

Point

- Do not run multiple transmission lines (D and G) using a multicore cable.

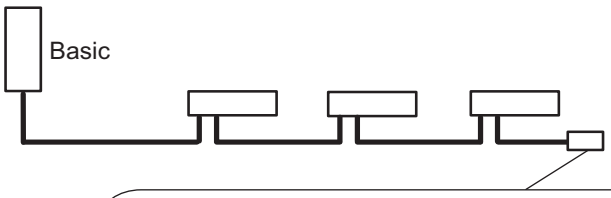


- Use the following line diameters for the transmission lines.
  - 200m or shorter: 0.75mm^2 to 1.25mm^2
  - 200m or longer: 0.9mm^2 to 1.25mm^2
- The voltage should not fall below the lower limit of the allowable voltage range due to the voltage drop caused by the cable.
  If the voltage falls below the lower limit, malfunctions may occur.
  If the voltage falls substantially, install the external power supply.
- Do not connect soldered cables directly to the terminals. Doing so may loosen the screws, resulting in a poor contact.

4.3 Terminating Resistor

To ensure more stable transmission quality, connect a terminating resistor (AT2 manufactured by Anywire Corporation) at the end of the transmission line.

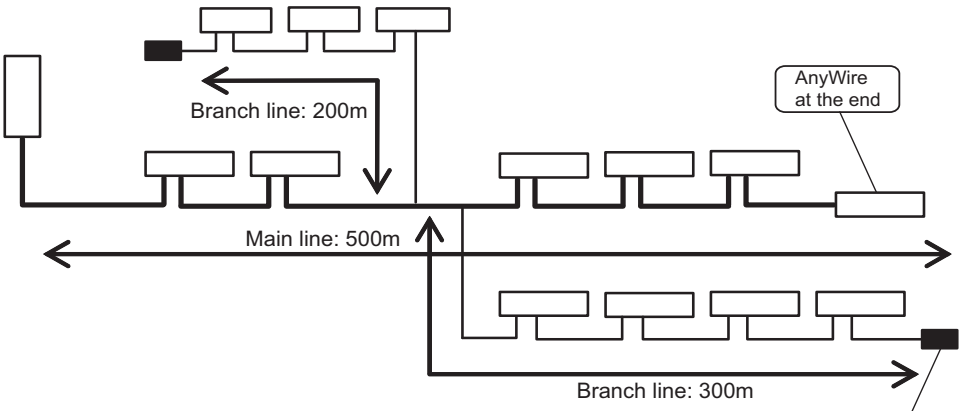
■ Terminating resistor connection



Important Connect a terminating resistor at the end of a line for one master module.
Transmission distance 50m (total length)
200m (total length)
1km (total length)
3km (total length)
The setting applies to all the transmission speeds.

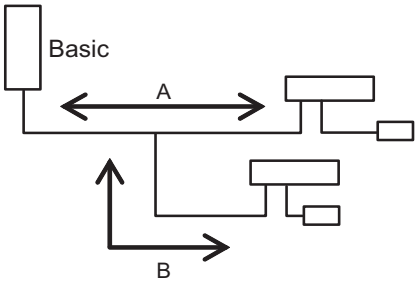
■ Branch of transmission lines (transmission distance: 1km)

<Example>



Important Connect one terminating resistor at the end of a branch line that exceeds 200m. Contact us if more than two branch lines exceed 200m.

■ Total length



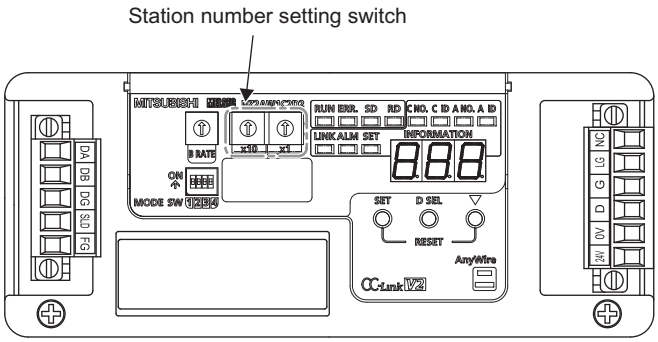
The total length of the transmission distance for the AnyWire DB A20 system can be calculated from A + B. Note that the total length should not exceed the maximum transmission distance set for the system to branch lines.

CHAPTER 5 SWITCH SETTING

5.1 CC-Link Side

(1) Station number setting switch

Set the station number of CC-Link using the station number setting switch (STATION NO. switch).
Since the NZ2AW1C2D2 occupies four stations, the maximum setting value is 61.

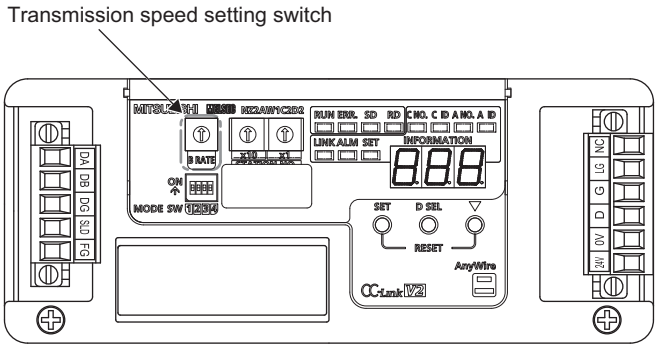


Station number*1	Station number setting switch	
	×10	×1
1	0	1
2	0	2
3	0	3
4	0	4
⋮	⋮	⋮
60	6	0
61	6	1

*1 All the switch positions are set to zero (0) when the product is shipped.
The ERR. LED turns on when the switch is set to zero (0) or 62 or larger.

(2) Transmission speed setting switch

Set the communication speed of CC-Link using the transmission speed setting switch (B RATE switch).
Set the same value as the master station.



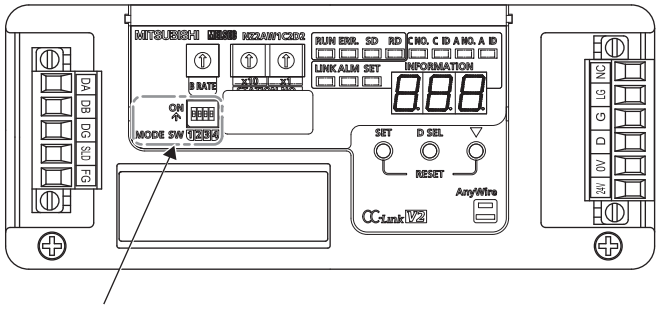
Setting value of the transmission speed setting switch	Communication speed
0*1	156Kbps
1	625Kbps
2	2.5Mbps
3	5Mbps
4	10Mbps
5 to F	Unable to set*2

*1 The switch is set to zero (0) when the product is shipped.
*2 The ERR. LED turns on when the switch is set to five (5) or larger.

5.2 AnyWire DB A20 Side

(1) Specification selection switch (MODE switch)

Set the transmission specifications of AnyWire DB A20 using the specification selection switch (MODE switch).



Specification selection switch (MODE switch)

SW-1, 2	Set the transmission specification using a combination of ON/OFF of 1 and 2.
SW-3	System reserve (Set the switch to OFF. Using the module with this switch set to ON may cause malfunction.)
SW-4	Select the clear mode/hold mode of the output.

Specification selection switch		Specifications
1	2	
OFF	OFF	2kHz 3km
OFF	ON	7.8kHz 1km
ON	OFF	31.3kHz 200m
ON	ON	125kHz 50m

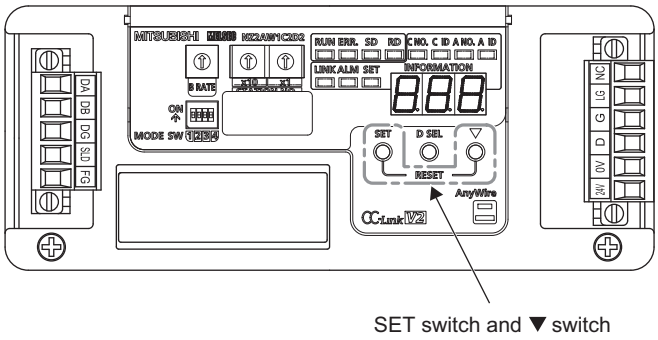
Specification selection switch	Operation mode	Specifications
4		
OFF	Clear mode	Clears the output on the AnyWire DB A20 side when the CPU module is switched to STOP from RUN or the Reset switch is pressed. Forced output is not available from the programming tool.
ON	Hold mode	Holds the output on the AnyWire DB A20 side when the CPU module is switched to STOP from RUN or the Reset switch is pressed. Forced output is available from the programming tool.

Point

- Switch off the power supply before setting the specification selection switch.
- Set the specification selection switch according to the number of transmission points to be used.
- If the transmission specifications of the NZ2AW1C2D2 do not match with those of the connected slave module, transmission cannot be performed correctly.
  Failure to do so may cause malfunction.
- The specification selection switch is recessed from the front surface.
  When setting the switch, use a precision driver or a similar tool and be careful not to damage any of the internal boards.

5.3 Reset Operation

The NZ2AW1C2D2 can be reset by pressing the SET switch with the "▼" switch pressed. After reset, release both of the switches at the same time.
When the SET switch is held down for three seconds or longer, the automatic address detection is performed. Do not try to reset the NZ2AW1C2D2 during automatic address detection. Otherwise, the address of the slave module may not be registered successfully.



SET switch and ▼ switch

During reset, the transmission signal goes into suspend state and the slave module for output operates according to the setting assigned to Switch 4 of the specification selection switch. Check that no problem exists in the system when resetting the module.

CHAPTER 6 MEMORY MAPS

The NZ2AW1C2D2 occupies four stations starting from the station number specified in the CC-Link system and operates in the extended cyclic double mode.
Remote input (RX) and remote output (RY) use 224 points (14 words), respectively.
Remote registers (RWw and RWr) use 32 words, respectively.
For information about the buffer memory address of the master module, refer to the user's manual of the master module used.

6.1 Remote I/O Signal List

Signal direction: From the NZ2AW1C2D2 to the master module		Signal direction: From the master module to the NZ2AW1C2D2	
Remote input (RX)	**Name**	**Remote output (RY)**	**Name**
RXn0	The D/G line short-circuited detection	RYn0	Automatic address detection command output*1
RXn1	The D/24V line short-circuited detection	RYn1 to RY(n+D)9	Use prohibited
RXn2	24V not applied, or voltage drop detection		
RXn3	Transmission line disconnection detection, slave module failure, or power not applied		
RXn4 to RXn7	Use prohibited		
RXn8 to RXnF	No. of error addresses		
RX(n+1)0 to RX(n+1)F	Error address 1		
RX(n+2)0 to RX(n+2)F	Error address 2		
RX(n+3)0 to RX(n+3)F	Error address 3		
RX(n+4)0 to RX(n+4)F	Error address 4		
RX(n+5)0 to RX(n+5)F	Error address 5		
RX(n+6)0 to RX(n+6)F	Error address 6		
RX(n+7)0 to RX(n+7)F	Error address 7		
RX(n+8)0 to RX(n+8)F	Error address 8		
RX(n+9)0 to RX(n+9)F	Error address 9		
RX(n+A)0 to RX(n+A)F	Error address 10		
RX(n+B)0 to RX(n+B)F	Error address 11		
RX(n+C)0 to RX(n+C)F	Error address 12		
RX(n+D)0 to RX(n+D)9	Use prohibited		
RX(n+D)A	Error status flag	RY(n+D)A	Error reset request flag
RX(n+D)B	Remote station READY	RY(n+D)B	Use prohibited
RX(n+D)C	Use prohibited	RY(n+D)C	
RX(n+D)D		RY(n+D)D	
RX(n+D)E		RY(n+D)E	
RX(n+D)F		RY(n+D)F	

n: Address assigned to the master station by the station number setting

*1 Turning it from OFF to ON starts the automatic address detection.
However, it does not start if a transmission error occurs in AnyWire DB A20.

Point

- How to check error addresses
  Below is the example of when the NZ2AW1C2D2 is station No. 1 and RX is assigned starting from X1000 on GX Works2.

  The following are the areas related to error addresses:
  - X1000 to X100F: RX0000 to RX000F
  - X1010 to X101F: RX0010 to RX001F
  - X1020 to X102F: RX0020 to RX002F
    :
  - X10C0 to X10CF :RX00C0 to RX00CF

	Bit No.															
X1000 to X100F	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Number of modules with an error detected								Spare				D-G line disconnection	24V not supplied/low voltage	D-24V line short-circuited	D-G line short-circuited
X1010 to X101F	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0				Error address 1											
X1020 to X102F	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0				Error address 2											
⋮	⋮				⋮											
X10C0 to X10CF	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0				Error address 12											

- Expression of error addresses
  - Binary values for 0 to 511 = Output slave module address
  - Binary values for 512 to 1023 - 512 = Input slave module address

6.2 Remote Register List

Input or output of AnyWire DB A20 uses the remote register of CC-Link.
Thirty-two words are used respectively for input and output.
Set the address for slave modules in the range from 0 to 511 for both input and output modules.

CC-Link side remote register input	AnyWire DB A20 side input address	CC-Link side remote register output	AnyWire DB A20 side output address
RWrn+0_H	0 to 15	RWwm+0_H	0 to 15
RWrn+1_H	16 to 31	RWwm+1_H	16 to 31
RWrn+2_H	32 to 47	RWwm+2_H	32 to 47
⋮	⋮	⋮	⋮
RWrn+$1D_H$	464 to 479	RWwm+$1D_H$	464 to 479
RWrn+$1E_H$	480 to 495	RWwm+$1E_H$	480 to 495
RWrn+$1F_H$	496 to 511	RWwm+$1F_H$	496 to 511

m, n: Address assigned to the master station by the station number setting

6.3 Correspondence between Remote Registers and AnyWire Addresses

This section describes the correspondence between the remote register and AnyWire address.

Ex. When RWrn = D1000 is set with the network parameters of GX Works2

Remote register	Bit No.															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RWrn + 0_H	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RWrn + 1_H	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16

D1001.F = AnyWire input address: 31

D1000.0 = AnyWire input address: 0

The slave module requires "Address setting" which specifies the start number assigned in the transmission frame. The settings are configured in units of two points. The addresses of both input slave module (e.g. input remote I/O module) and output slave module (e.g. output remote I/O module) start from “0”, and the area later than that number is occupied corresponding to the number of module points.

Ex. Assignment of two 8-point input remote I/O modules

Remote register	Bit No.															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RWrn + 0_H	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

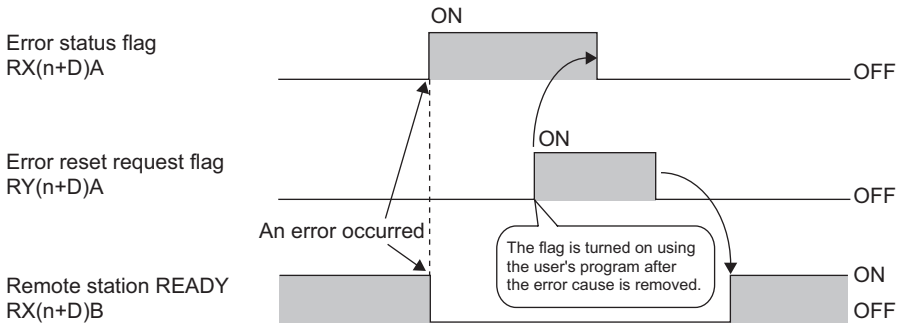
AnyWire address: 15 ---------- AnyWire address: 0

Occupied area by the address 8 on the 8-point input remote I/O module

Occupied area by the address 0 on the 8-point input remote I/O module

6.4 Error Reset

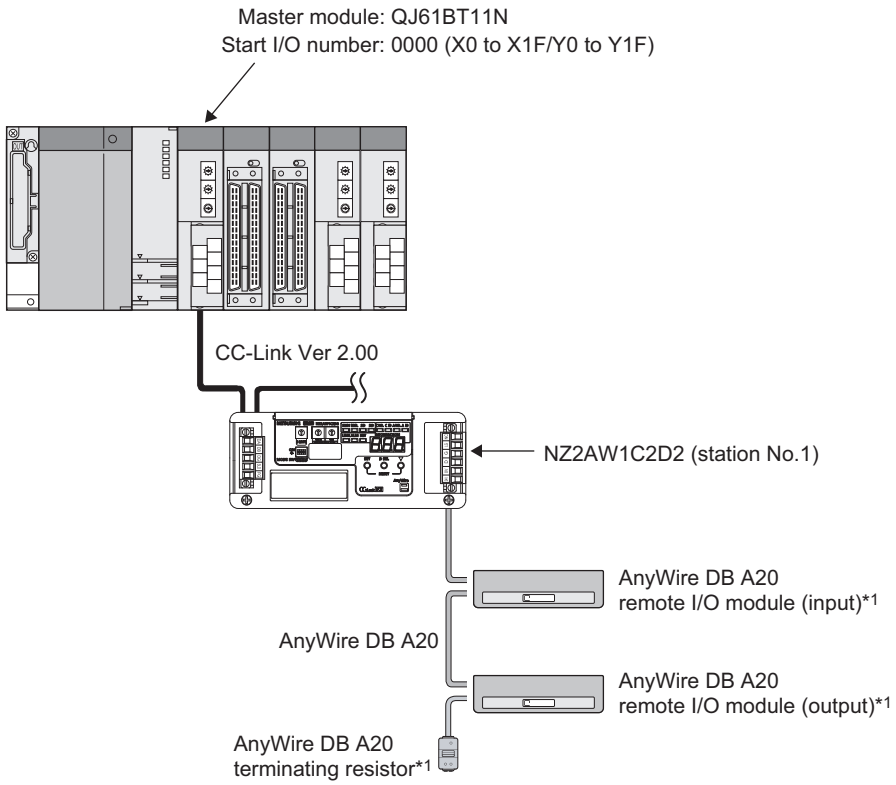
"Remote station READY" is turned on after the reset by supplying the power.
"Error status flag" is set (OFF to ON) when an error occurs. Turning on "Error reset request flag" from off resets "Error status flag" (ON to OFF), provided that the error cause has been removed.
"Remote station READY" is reset (ON to OFF) when an error occurs. "Remote station READY" remains reset (OFF) until "Error reset request flag" is turned off from on.



CHAPTER 7 PREPARATION FOR OPERATION

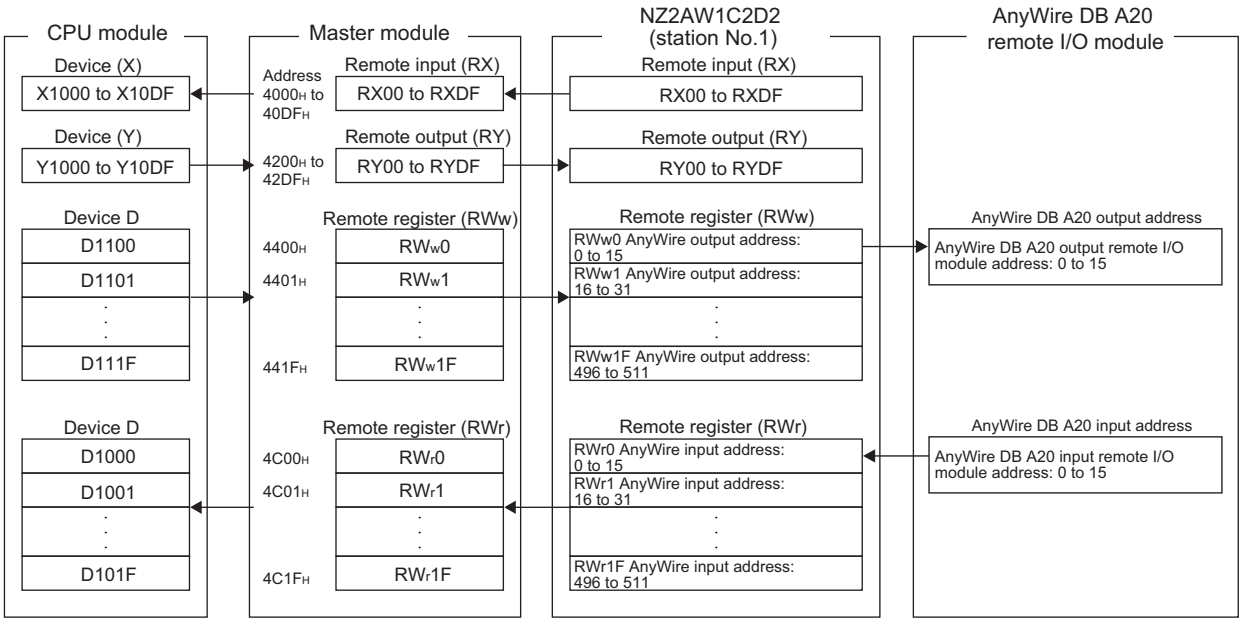
This chapter provides examples of the parameter setting for the MELSEC-Q series systems.

(1) System configuration



*1: Manufactured by Anywire Corporation

(2) Correlation among a CPU module, a mater module, the NZ2AW1C2D2, and an AnyWire DB A20 remote I/O module



(3) Parameter setting

Parameter setting is required for CC-Link communication between the master station and the NZ2AW1C2D2.
Parameter setting for CC-Link can be configured by the network parameter of the programming tool.
(Setting can also be configured using the program.)

Point

Configure the parameter setting by either the network parameter setting or program.
Redundant settings by different means may cause unstable output because of the duplicated access to the buffer memory.

[Setting example]

Project window ⇨ [Parameter] ⇨ [Network parameter] ⇨ [CC-Link]

	1
Start I/O No.	0000
Operation Setting	Operation Setting
Type	Master Station
Master Station Data Link Type	PLC Parameter Auto Start
Mode	Remote Net(Ver.2 Mode)
Total Module Connected	1
Remote Input(RX)	X1000
Remote Output(RY)	Y1000
Remote Register(RWr)	D1000
Remote Register(RWw)	D1100
Ver.2 Remote Input(RX)	
Ver.2 Remote Output(RY)	
Ver.2 Remote Register(RWr)	
Ver.2 Remote Register(RWw)	
Special Relay(SB)	SB0
Special Register(SW)	SW0
Retry Count	3
Automatic Reconnection Station Count	1
Standby Master Station No.	
PLC Down Select	Stop
Scan Mode Setting	Asynchronous
Delay Time Setting	0
Station Information Setting	Station Information
Remote Device Station Initial Setting	Initial Setting
Interrupt Settings	Interrupt Settings

Double-click "Station Information" to open the "Station Information Setting" window as shown below.

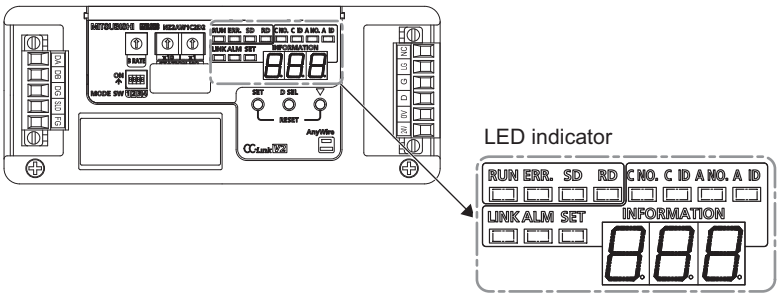
Station No.	Station Type	Expanded Cyclic Setting	Exclusive Count	Remote Station Points	Reserve/Invalid Station Select	Intelligent Buffer Select(Word)		
						Send	Receive	Automatic
1/ 1	Ver.2 Remote Device Station	Double	Exclusive Station 4	224Points	No Setting			

In this sample setting, the correspondence between each signal and device is as indicated in the following table.

Signal	Name	Corresponding device for station No. 1
RX	The D/G line short-circuited detection	X1000
	The D/24V line short-circuited detection	X1001
	24V not applied or voltage drop detection	X1002
	Transmission line disconnection detection, slave module failure, or power not applied	X1003
	Use prohibited	X1004 to X1007
	No. of error addresses	X1008 to X100F
	Error address 1	X1010 to X101F
	⋮	⋮
	Error address 12	X10C0 to X10CF
	Use prohibited	X10D0 to X10D9
	Error status flag	X10DA
	Remote station READY	X10DB
	Use prohibited	X10DC to X10DF
RY	Automatic address detection command output	Y1000
	Use prohibited	Y1001 to Y10D9
	Error reset request flag	Y10DA
	Use prohibited	Y10DB - Y10DF
RWr	AnyWire DB A20 input address 0	D1000.0
	AnyWire DB A20 input address 1	D1000.1
	⋮	⋮
	AnyWire DB A20 input address 14	D1000.E
	AnyWire DB A20 input address 15	D1000.F
RWw	AnyWire DB A20 output address 0	D1100.0
	AnyWire DB A20 output address 1	D1100.1
	⋮	⋮
	AnyWire DB A20 output address 14	D1100.E
	AnyWire DB A20 output address 15	D1100.F

CHAPTER 8 POWER-ON AND PART INDICATION

Check each connection before turning on the power.
The status of the indicator is as shown below when each setting and connection are correct.



■ LED indication on the NZ2AW1C2D2

LED on the CC-Link side		LED on the AnyWire DB A20 side	
Indicator	**Status**	**Indicator**	**Status**
RUN	On	LINK	Flashing
ERR.	Off	ALM	Off
SD	On	SET	Off
RD	On		

■ LED indication on a slave module

LED on the AnyWire DB A20 side	
Indicator	**Status**
RDY	On
LINK	Flashing

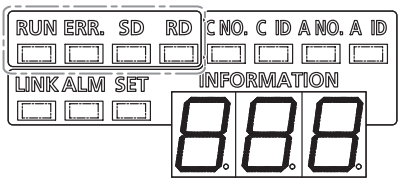
Check the LED indication described above before performing the automatic address detection. (☞ Page 41, Section 9.1)
When the indication is different from the information above, check the indication condition and possible cause. Then eliminate the problem according to the troubleshooting steps. (☞ Page 48, CHAPTER 12)

Point

- When the power is turned on for the first time, "A-4" is indicated on the INFORMATION display. This is because the slave module has not been registered by the automatic address detection operation.
- Registering a slave module by the automatic address detection operation enables the disconnected transmission line location detection function.
- Data is transmitted regardless of the automatic address detection operation.
- After the automatic address detection operation is carried out, the number of slave modules is indicated on the INFORMATION display.
  If the indicated number differs from the actual number of connected modules, it may possibly be due to duplicated address setting, incorrect wiring, or effect of noise. Eliminate the problem according to the troubleshooting steps.
  (☞ Page 48, CHAPTER 12)

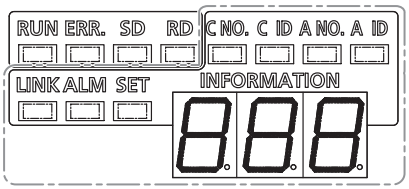
8.1 LED Indication Specification

(1) LED on the CC-Link side



Indicator	Name	Color	Description	
RUN	CC-Link communication status	Green	On	Normal communication
			Off	• Transmission cable disconnected • Transmission cable connected incorrectly • Wrong transmission speed selected • Hardware reset under way
ERR.	CC-Link error display	Red	On	• CRC error • Incorrect setting of the station number setting switch (set to zero or 62 or larger) • Incorrect setting of the transmission speed setting switch (set to 5 or larger)
			Off	• Normal communication • Hardware reset under way
			Flashing	• Flashing regularly (0.4 second): Setting for the station number or transmission speed setting switch has been changed while the power is on. • Flashing irregularly: A terminating resistor has not been connected. The module or CC-Link dedicated cable is affected by noise.
SD	CC-Link data transmission display	Yellow	On	Data transmission under way
			Off	• Transmission cable disconnected • Transmission cable connected incorrectly • Wrong transmission speed selected • Hardware reset under way
			Flashing	A terminating resistor has not been inserted on the CC-Link master module and the last station module.
RD	CC-Link data reception display	Yellow	On	Data reception under way
			Off	• Transmission cable disconnected • Transmission cable connected incorrectly • Hardware reset under way
			Flashing	A terminating resistor has not been inserted on the CC-Link master module and the last station module.

(2) LED on the AnyWire DB A20 side



Indicator	Name	Color	Description	
LINK	AnyWire DB A20 transmission status	Green	On	Module operating status
			Off	Module failure
ALM	AnyWire DB A20 alarm display	Red	On	D/G line disconnection, or no response from the slave module
			Slow flashing*1	The D/G or D/24V line short-circuited, or the equivalent status
			Rapid flashing*2	24VDC is not supplied, or the supply voltage is too low
			Off	During normal transmission
SET	Automatic address detection display	Yellow	On	During automatic address detection operation
			Off	During normal transmission
C NO.	INFORMATION indication	Green	On	No. of connected modules displayed
C ID		Green	On	Connection address displayed
A NO.		Green	On	No. of error modules displayed
A ID		Green	On	Error address displayed
INFORMATION (Segment indication)	AnyWire DB A20 connection information	-	The no. of connected modules is displayed in normal operation (the ALM LED off), and the alarm code is displayed in the case of an error (the ALM LED on).	
			A-1	The D/G line short-circuited
			A-2	The D/24V line short-circuited
			A-3	24VDC is not supplied, or the supply voltage is too low
			A-4	Transmission line disconnection, slave module failure, or power not applied

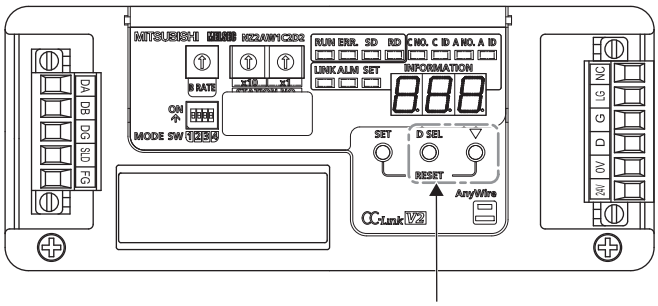
*1 "Slow flashing": at approximately one-second intervals.
*2 "Rapid flashing": at approximately 0.2-second intervals.

Point

- Indication of "A-1", "A-2", or "A-3" on the INFORMATION display is restored, not retained, when the error is removed.
- Indication of "A-4" on the INFORMATION display is retained until the power is turned off, the error is reset, or the automatic address detection is performed.
- When the D SEL switch or ▼ switch is not operated for about five seconds, the indication shows the number of the connected modules in normal operation and the alarm code in the case of an error.

(3) Display selection switch

Select indication on the INFORMATION display by using the D SEL or ▼ switch.



Display selection switch
(D SEL switch and ▼ switch)

The following table shows indication displayed by the D SEL switch.

INFORMATION display	Error description
Normal operation	→ C.No. → C.ID →
Error (in the case of A-4)	Alarm code → A.No. → A.ID → C.No. → C.ID →
Error (in the case other than A-4)	Alarm code → C.No. → C.ID →

Pressing the ▼ switch while the C ID LED or the A ID LED is on displays the address of the slave module. The addresses are displayed in hexadecimal.

INFORMATION display	Description
000_H to $1FF_H$	Address of the output slave module
200_H to $3FF_H$	Address of the input slave module

CHAPTER 9 MONITORING FUNCTION

The AnyWire DB A20 slave module has a specific ID (address). By sending an ID (address) and receiving a response from the slave module having that ID (address), the NZ2AW1C2D2 detects disconnection and the existence of the slave module.
Through the automatic address detection operation, the NZ2AW1C2D2 stores the addresses of the currently connected slave modules in the EEPROM.
This information is stored even when the power is turned off.
Then the NZ2AW1C2D2 sends registered IDs (addresses) in order. If the module does not receive a response from the corresponding slave modules, it regards them as disconnected and the ALM LED shows the disconnection.
The addresses of the error slave modules can be checked using the INFORMATION display.

9.1 Automatic Address Detection

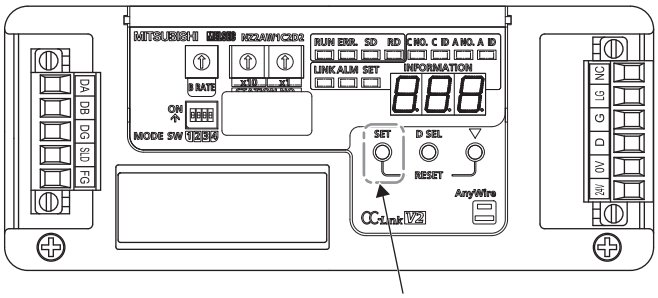
Automatic address detection is a function to store the IDs (addresses) of the connected slave modules in the EEPROM of the NZ2AW1C2D2.
Operate the automatic address detection in the following situations.

- When starting the system operation with all the slave modules connected to the bridge module
- When adding a slave module
- When removing a slave module
- When changing the address of a slave module

Two procedures are available for this operation.

Using the SET switch
Procedure

1. **Check that all of the slave modules are operating normally.**
2. **Keep pressing the SET switch until the SET LED (yellow) turns on.**
3. **When the SET LED turns on, flashes, and turns off, the ID (address) has been stored.**



SET switch

Using the automatic address detection command output
Procedure

1. **Check that all of the slave modules are operating normally.**
2. **Turn the automatic address detection command output (RYn0) from off to on.**
   (For details on the automatic address detection command output, refer to Page 29, CHAPTER 6.)
3. **When the SET LED turns on, flashes, and turns off, the ID (address) has been stored.**

Point

- During the automatic address detection, input or output may not be accepted. When operating the automatic address detection, stop executing the programmable controller's program to ensure that the equipment is not interfered.
- When an error such as a short circuit occurs in AnyWire DB A20, or for approximately five seconds after the power is turned on or the module is reset, the automatic address detection cannot be operated.
- Do not operate the automatic address detection when a disconnection error has occurred while in operation. Otherwise, disconnection information may be lost.

9.2 Monitoring Operation

Registered IDs (addresses) are sent in order. If the slave module does not reply, disconnection is detected.
In the case of disconnection, the ALM LED turns on and the input RXn3 turns on.
This error information is maintained until the power is turned off or the error is reset (RY(n+D)A).

Point

To reset the ALM LED indication detected during operation or line disconnection detection (RXn3:ON), remove the error cause and then reset the power supply for the NZ2AW1C2D2 or turn on the error reset (RY(n+D)A).
The automatic address detection operation also clears the indication and the flag. However, if an unresponding module exists, its ID (address) is not registered; therefore it is not monitored.

CHAPTER 10 CC-LINK I/O RESPONSE TIME

For information about the transmission delay time on the CC-Link side, refer to the user's manual for the master module used.

Remark

When only one NZ2AW1C2D2 is connected to the master station, the link scan time is about 1.4ms at a transmission speed of 10Mbps.
The table below provides the transmission delay time on the CC-Link side in the asynchronous mode when the sequence scan time of the master station is "10ms", the extended cyclic setting is "Double", and the processing time of the NZ2AW1C2D2 is "1ms".

Signal direction	Transmission delay time	
	TYP	MAX
Remote device station (RX) to the master station (RX)	Approx. 15.3ms	Approx. 19.6ms
Master station (RY) to the remote device station (RY)	Approx. 16.7ms	Approx. 21.0ms
Remote device station (RWr) to the master station (RWr)	Approx. 15.3ms	Approx. 19.6ms
Master station (RWw) to the remote device station (RWw)	Approx. 16.7ms	Approx. 21.0ms

Memo

CHAPTER 11 TRANSMISSION TIME

This chapter describes the transmission cycle time and transmission delay time of AnyWire DB A20.

11.1 Transmission Cycle Time

The transmission cycle time is the time required for a bridge module and all slave modules to update the I/O data.

11.1.1 Transmission cycle time of the NZ2AW1C2D2

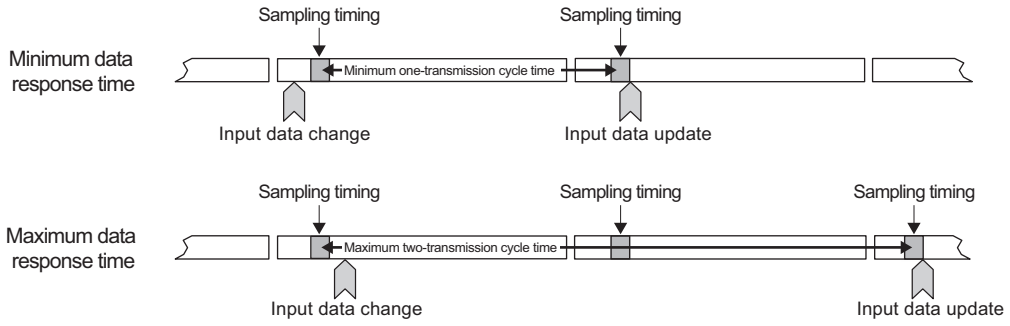
The transmission cycle time of the NZ2AW1C2D2 is as shown in the table below.

Setting of the maximum no. of transmission points	Transmission cycle time			
	125kHz (50m)	31.3kHz (200m)	7.8kHz (1km)	2kHz (3km)
1024 points (512 points × 2)	4.3ms	17.1ms	68.2ms	262.9ms

11.1.2 Effects of double check system

(1) Input

Unless the same data is received twice successively on the NZ2AW1C1BY side, the input area data is not updated (double check). Therefore, a minimum of one-transmission cycle time and a maximum of two-transmission cycle time are required as the data response time.
Signals of two-transmission cycle time or less may not be captured depending on the timing.
Therefore, to ensure the response, provide an input signal that is longer than two-transmission cycle time.



(2) Output

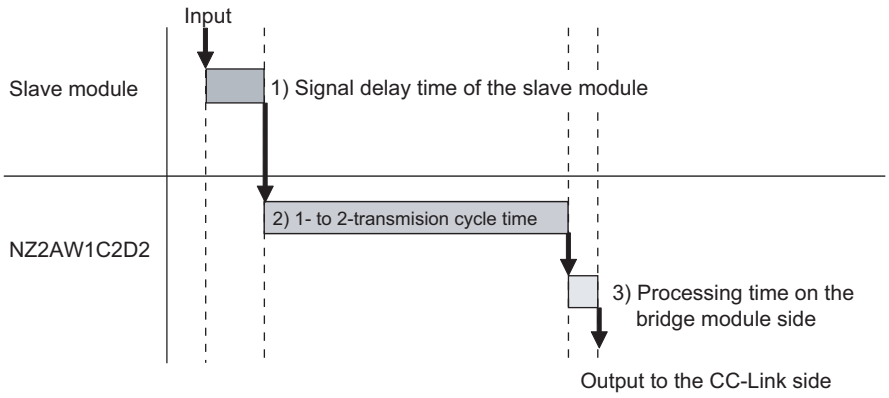
As the double check is performed on the slave module side, the time required is the same as that for input, namely a minimum of one-transmission cycle time and a maximum of two-transmission cycle time.

11.2 Transmission Delay Time

This section describes the transmission delay time (time until data is transmitted).

11.2.1 Slave module (input) to bridge module

The figure below shows the time between a signal input to the slave module and the bridge module remote device (RX) turning on/off.


Input
Slave module
1) Signal delay time of the slave module
2) 1- to 2-transmision cycle time
NZ2AW1C2D2
3) Processing time on the bridge module side
Output to the CC-Link side

[Calculation formula]

1) Signal delay time of the slave module + 2) Transmission cycle time × 2 + 3) Processing time on the bridge module side [ms]

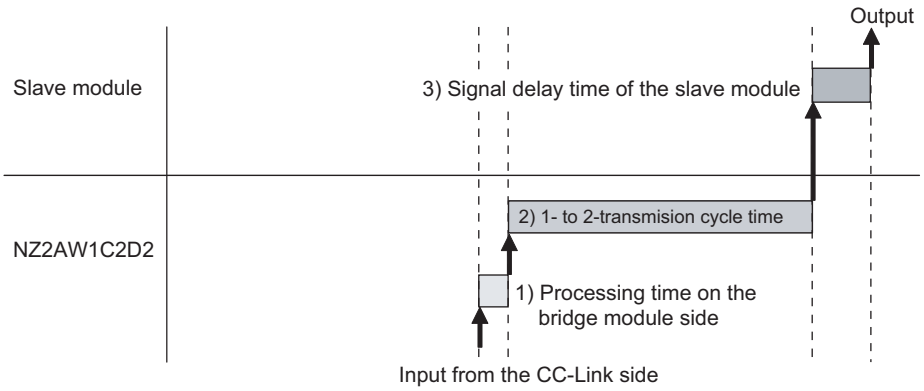
[Calculation example]

1) Signal delay time of the slave module
   Signal delay time of the slave module is 0.17ms.: 0.17[ms]
2) Transmission cycle time × 2
   When the transmission speed is set to 31.3kHz: 17.1 × 2 = 34.2[ms]
3) Processing time on the bridge module side
   Processing time on the bridge module side = Transmission speed clock width × 16
   When the transmission speed is set to 31.3kHz: (1 ÷ 31.3k) × 16 = 0.511[ms]

Therefore, the transmission delay time is 0.17 + 34.2 + 0.511 ≒ 35[ms]

11.2.2 Bridge module to slave module (output)

The figure below shows the time between the bridge module remote device (RY) turning on/off and the slave module output turning on/off.


Output
Slave module
3) Signal delay time of the slave module
2) 1- to 2-transmision cycle time
NZ2AW1C2D2
1) Processing time on the bridge module side
Input from the CC-Link side

[Calculation formula]

1) Processing time on the bridge module side + 2) Transmission cycle time × 2 + 3) Signal delay time of the slave module [ms]

[Calculation example]

1) Processing time on the bridge module side
   Processing time on the bridge module side = Transmission speed clock width × 16
   When the transmission speed is set to 31.3kHz: (1 ÷ 31.3k) × 16 = 0.511[ms]
2) Transmission cycle time × 2
   When the transmission speed is set to 31.3kHz: 17.1 × 2 = 34.2[ms]
3) Signal delay time of the slave module
   Signal delay time of the slave module is 0.01ms.: 0.01[ms]

Therefore, the transmission delay time is 0.511 + 34.2 + 0.01 ≒ 35[ms]

CHAPTER 12 TROUBLESHOOTING

If the transmission does not start normally, check the following items and perform the troubleshooting.

- The CC-Link cable is properly connected.
- The terminating resistor of CC-Link is properly connected.
- The station numbers of CC-Link are not duplicated.
- AnyWire DB A20 devices are being supplied with 24VDC power.
- The LINK LED on the slave module of AnyWire DB A20 is flashing.
- The address settings of AnyWire DB A20 are correct and are not duplicated.

Remark

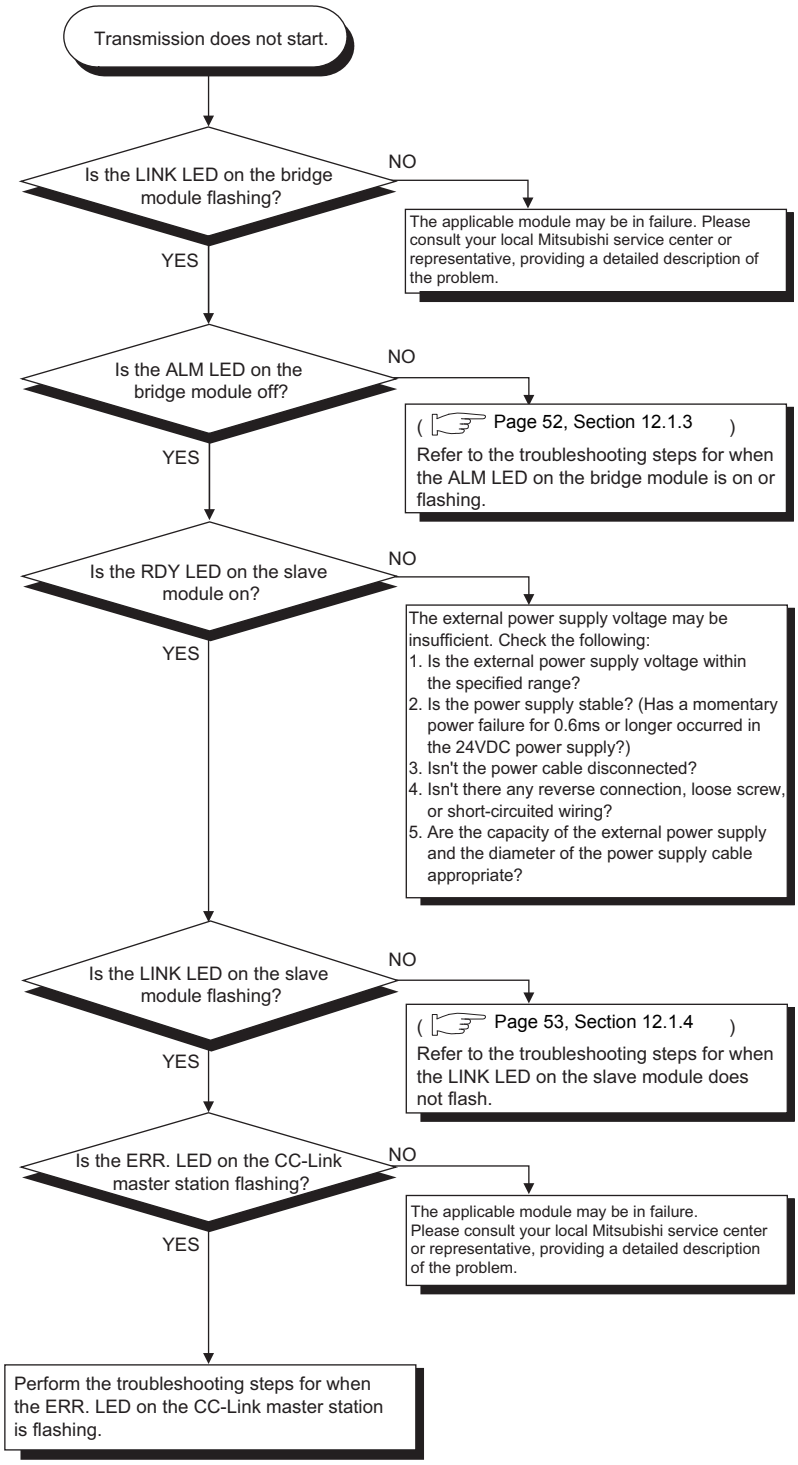
The reference pages for each specification required during troubleshooting are shown below.

- Connections : ☞ Page 20, CHAPTER 4
- Operation mode : ☞ Page 25, CHAPTER 5
- Data I/O : ☞ Page 29, CHAPTER 6, Page 33, CHAPTER 7
- Details of the LED display : ☞ Page 37, CHAPTER 8

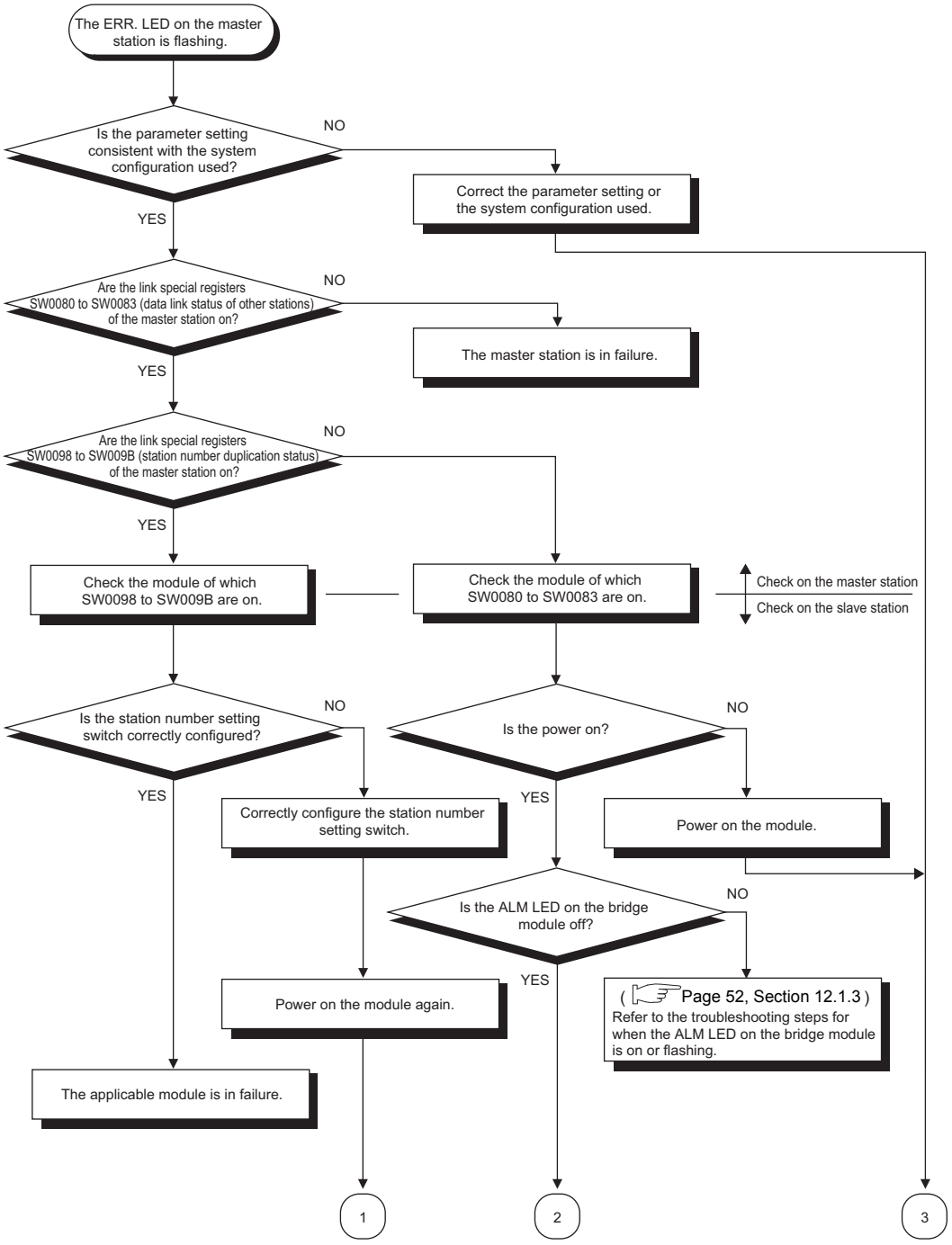
For details on the entire AnyWire system, refer to the "AnyWire DB A20 Series Technical Manual" (manufactured by Anywire Corporation).

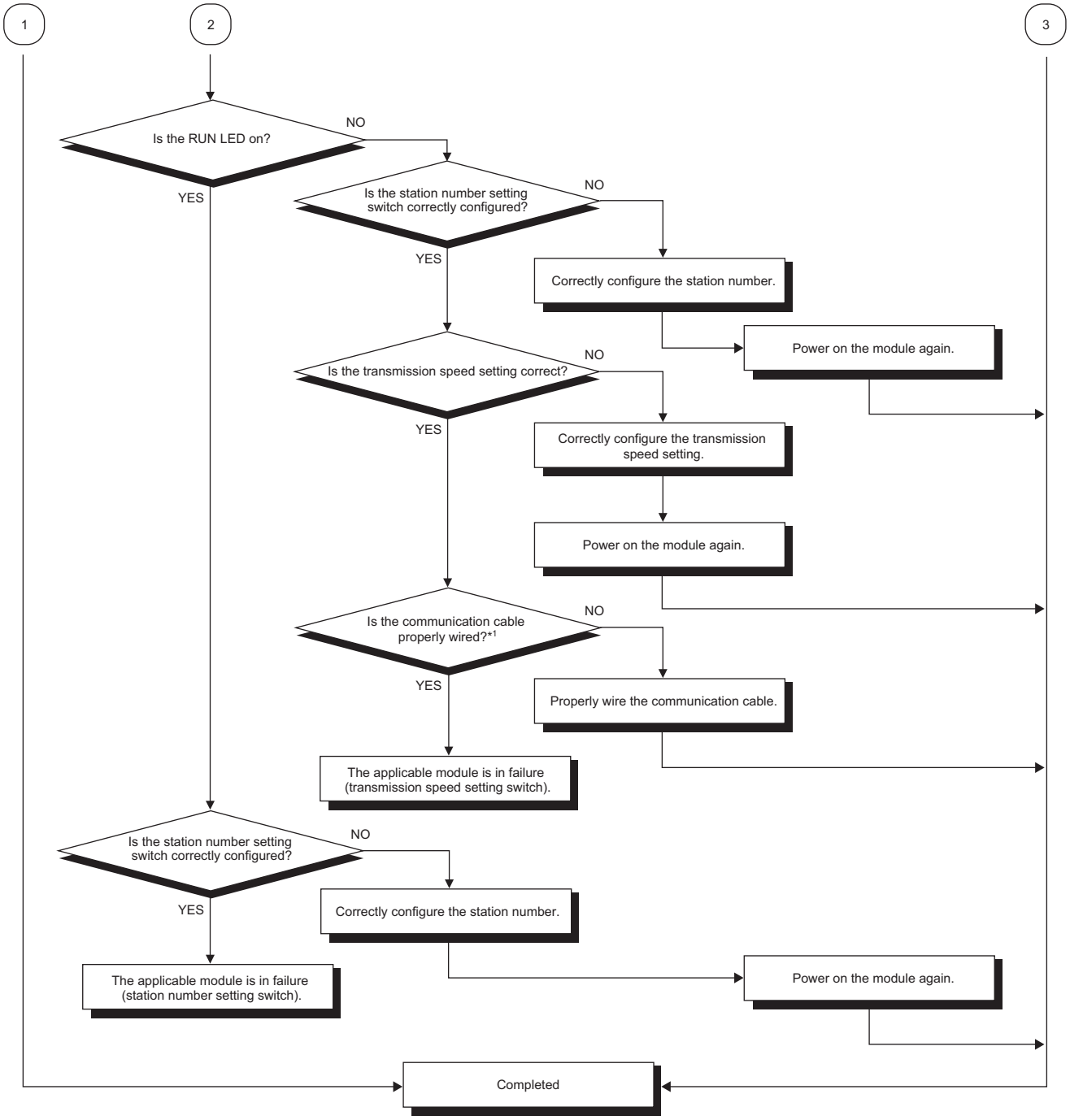
12.1 Troubleshooting Flow

12.1.1 When transmission does not start


Transmission does not start.
Is the LINK LED on the bridge module flashing?
NO
The applicable module may be in failure. Please consult your local Mitsubishi service center or representative, providing a detailed description of the problem.
YES
Is the ALM LED on the bridge module off?
NO
(Page 52, Section 12.1.3)
Refer to the troubleshooting steps for when the ALM LED on the bridge module is on or flashing.
YES
Is the RDY LED on the slave module on?
NO
The external power supply voltage may be insufficient. Check the following:
1. Is the external power supply voltage within the specified range?
2. Is the power supply stable? (Has a momentary power failure for 0.6ms or longer occurred in the 24VDC power supply?)
3. Isn't the power cable disconnected?
4. Isn't there any reverse connection, loose screw, or short-circuited wiring?
5. Are the capacity of the external power supply and the diameter of the power supply cable appropriate?
YES
Is the LINK LED on the slave module flashing?
NO
(Page 53, Section 12.1.4)
Refer to the troubleshooting steps for when the LINK LED on the slave module does not flash.
YES
Is the ERR. LED on the CC-Link master station flashing?
NO
The applicable module may be in failure.
Please consult your local Mitsubishi service center or representative, providing a detailed description of the problem.
YES
Perform the troubleshooting steps for when the ERR. LED on the CC-Link master station is flashing.

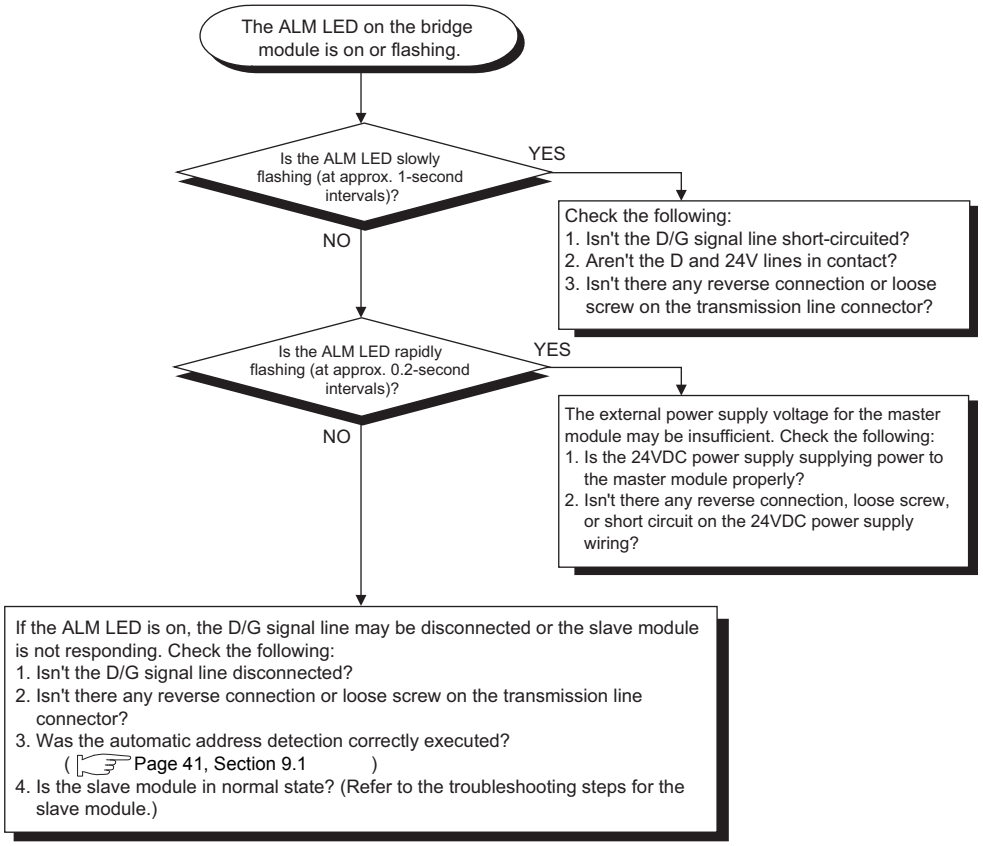
12.1.2 When the ERR. LED on the CC-Link master station is flashing


The ERR. LED on the master station is flashing.
Is the parameter setting consistent with the system configuration used?
NO
Correct the parameter setting or the system configuration used.
YES
Are the link special registers SW0080 to SW0083 (data link status of other stations) of the master station on?
NO
The master station is in failure.
YES
Are the link special registers SW0098 to SW009B (station number duplication status) of the master station on?
NO
YES
Check the module of which SW0098 to SW009B are on.
Check the module of which SW0080 to SW0083 are on.
Check on the master station
Check on the slave station
Is the station number setting switch correctly configured?
NO
Is the power on?
NO
YES
Correctly configure the station number setting switch.
YES
Power on the module.
Is the ALM LED on the bridge module off?
NO
YES
Power on the module again.
(Page 52, Section 12.1.3)
Refer to the troubleshooting steps for when the ALM LED on the bridge module is on or flashing.
The applicable module is in failure.
1
2
3

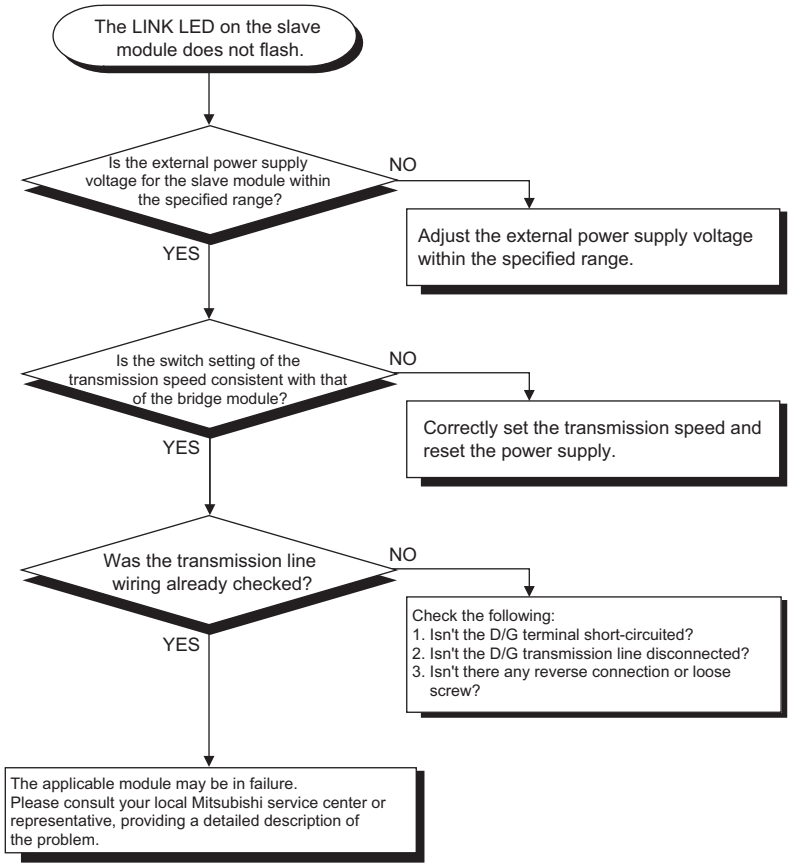


*1 Check for short circuit, reverse connection, disconnection, terminating resistor, FG connection, total length, and distance between stations.

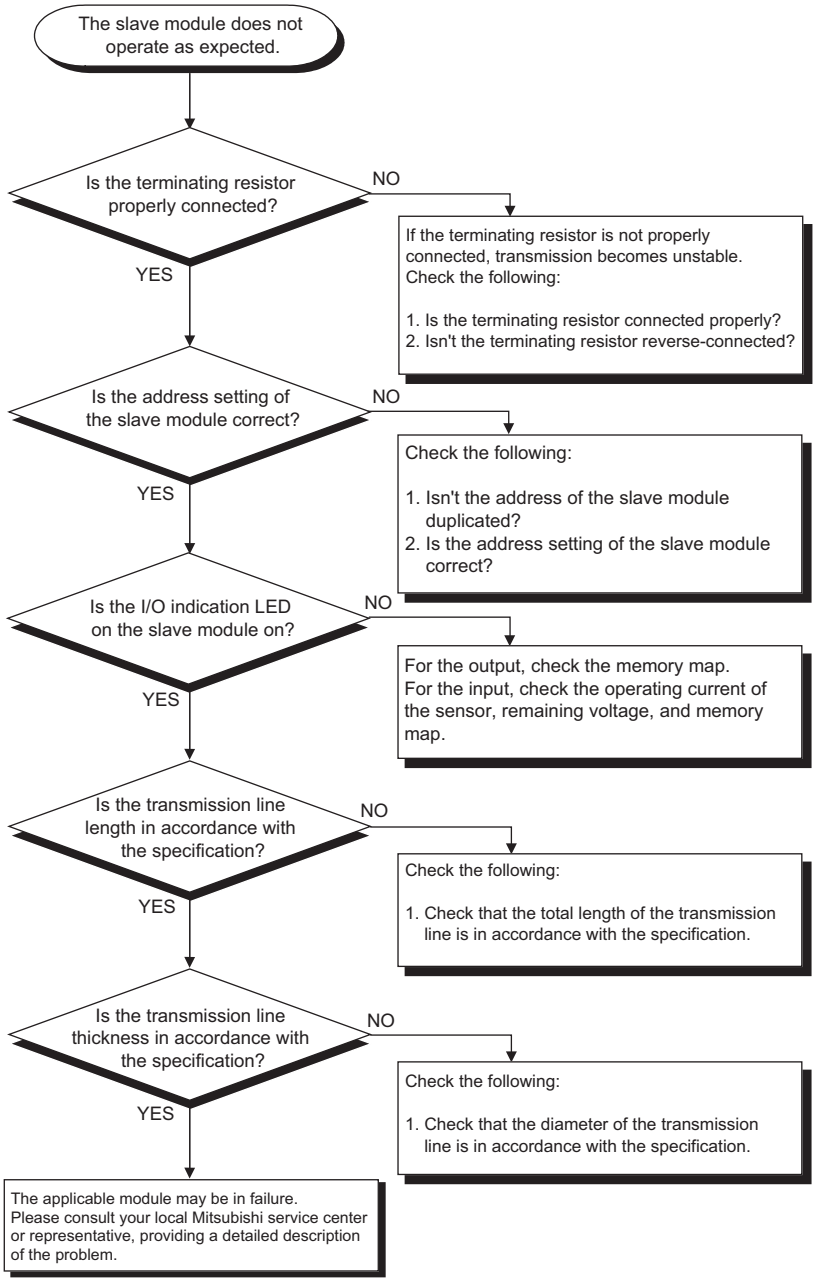
12.1.3 When the ALM LED on the bridge module is on or flashing


The ALM LED on the bridge module is on or flashing.
Is the ALM LED slowly flashing (at approx. 1-second intervals)?
YES
NO
Check the following:
1. Isn't the D/G signal line short-circuited?
2. Aren't the D and 24V lines in contact?
3. Isn't there any reverse connection or loose screw on the transmission line connector?
Is the ALM LED rapidly flashing (at approx. 0.2-second intervals)?
YES
NO
The external power supply voltage for the master module may be insufficient. Check the following:
1. Is the 24VDC power supply supplying power to the master module properly?
2. Isn't there any reverse connection, loose screw, or short circuit on the 24VDC power supply wiring?
If the ALM LED is on, the D/G signal line may be disconnected or the slave module is not responding. Check the following:
1. Isn't the D/G signal line disconnected?
2. Isn't there any reverse connection or loose screw on the transmission line connector?
3. Was the automatic address detection correctly executed?
(Page 41, Section 9.1)
4. Is the slave module in normal state? (Refer to the troubleshooting steps for the slave module.)

12.1.4 When the LINK LED on the slave module is not flashing


The LINK LED on the slave module does not flash.
Is the external power supply voltage for the slave module within the specified range?
NO
Adjust the external power supply voltage within the specified range.
YES
Is the switch setting of the transmission speed consistent with that of the bridge module?
NO
Correctly set the transmission speed and reset the power supply.
YES
Was the transmission line wiring already checked?
NO
Check the following:
1. Isn't the D/G terminal short-circuited?
2. Isn't the D/G transmission line disconnected?
3. Isn't there any reverse connection or loose screw?
YES
The applicable module may be in failure.
Please consult your local Mitsubishi service center or representative, providing a detailed description of the problem.

12.1.5 When the slave module does not operate as expected


The slave module does not operate as expected.
Is the terminating resistor properly connected?
NO
If the terminating resistor is not properly connected, transmission becomes unstable. Check the following:
1. Is the terminating resistor connected properly?
2. Isn't the terminating resistor reverse-connected?
YES
Is the address setting of the slave module correct?
NO
Check the following:
1. Isn't the address of the slave module duplicated?
2. Is the address setting of the slave module correct?
YES
Is the I/O indication LED on the slave module on?
NO
For the output, check the memory map.
For the input, check the operating current of the sensor, remaining voltage, and memory map.
YES
Is the transmission line length in accordance with the specification?
NO
Check the following:
1. Check that the total length of the transmission line is in accordance with the specification.
YES
Is the transmission line thickness in accordance with the specification?
NO
Check the following:
1. Check that the diameter of the transmission line is in accordance with the specification.
YES
The applicable module may be in failure.
Please consult your local Mitsubishi service center or representative, providing a detailed description of the problem.

12.2 Symptom Checklist

(1) CC-Link side

Symptom	Check item	Check method	Check
The data link is failed in the entire system.	Isn't the cable disconnected?	Check the condition of the cable visually or by line test. Check Line status (SW0090).	☐
	Are the terminating resistors (110Ω) connected to the stations on both ends?	Connect the terminating resistors provided with the master and local modules to the stations on both ends.	☐
	Isn't there any error in the CPU module of the master station?	Check the error code of the CPU module and take necessary actions.	☐
	Are the parameters set in the master station?	Check the parameter settings. Remote network-Ver.2 mode or remote network-addition mode Ver.2 remote device station Double setting, Occupies four stations	☐
	Is Data link startup request (Yn6 or Yn8) turned on?	Check the program.	☐
	Is there an error in the master station?	Check the following. • Host parameter status (SW0068) • Switch setting status (SW006A) • Loading status (SW0069) • Whether or not the ERR. LED on the master station is flashing.	☐
	Doesn't the scan time exceed the maximum value while the synchronous mode is selected?	Select the asynchronous mode or reduce the transmission speed.	☐
The remote input (RX) of the NZ2AW1C2D2 cannot be loaded.	Is the remote device station data-linked?	Check the status by the following methods. • LED indication status of the module • Other station data link status (SW0080 to SW0083)	☐
	Is data loaded from the correct address of the remote input RX (buffer memory)?	Check the program.	☐
	Isn't it set as a reserved station?	Check the parameters.	☐
	Aren't the station numbers duplicated?	Check the station numbers.	☐
The remote output (RY) of the NZ2AW1C2D2 cannot be turned on/off.	Is the remote device station data-linked?	Check the status by the following methods. • LED indication status of the module • Other station data link status (SW0080 to SW0083)	☐
	Is the refresh instruction (Yn0) of the master station turned on?	Check the program.	☐
	Is data loaded from the correct address of the remote input RX (buffer memory)?	Check the program.	☐
	Isn't it set as a reserved station?	Check the parameters.	☐
	Aren't the station numbers duplicated?	Check the station numbers.	☐
The data of the remote register (RWr) of the NZ2AW1C2D2 cannot be loaded.	Is the remote device station data-linked?	Check the status by the following methods. • LED indication status of the module • Other station data link status (SW0080 to SW0083)	☐
	Is data loaded from the correct address of the remote register RWr (buffer memory)?	Check the sequence program.	☐
	Isn't it set as a reserved station?	Check the parameters.	☐
	Aren't the station numbers duplicated?	Check the station numbers.	☐
Faulty stations cannot be detected.	Aren't the stations configured to ignore errors?	Check the parameters.	☐
	Aren't the station numbers duplicated?	Check the station numbers.	☐

(2) AnyWire DB A20 side

Symptom	Check item	Check method	Check
Data I/O is impossible.	■NZ2AW1C2D2 side		
	Is 24VDC being supplied appropriately?	Check the power voltage.	☐
	Is the D/G signal line connected correctly?	Check the wiring for AnyWire DB A20.	☐
	Is the MODE switch set correctly?	Check the MODE switch setting.	☐
	■Slave module side		
	Is 24VDC power being supplied appropriately?	Check the power voltage.	☐
	Is the D/G signal line connected correctly?	Check the wiring for AnyWire DB A20.	☐
	Is the address set correctly?	Check the address setting.	☐
	Is the transmission speed consistent with that of the bridge module?	Check the transmission speed setting.	☐
Data I/O is unstable.	Are AT2s (terminating resistors) connected? Are they connected in the correct polarities?	Check whether the terminal resistors are connected correctly.	☐
	Doesn't the actual transmission line length exceed the setting?	Check whether the total length and transmission speed are set properly.	☐
	Isn't a shield line being used for multiple-point grounding?	Check the wiring for AnyWire DB A20.	☐
The RDY LED on the slave module is flashing.	Is the supply voltage within the allowable voltage range (21.6V to 27.6V)?	Check the power voltage.	☐
	Isn't the power supply line disconnected? Isn't the power supply terminal loose?	Check the wiring for AnyWire DB A20.	☐
	Is the transmission speed consistent with that of the bridge module?	Check the transmission speed setting.	☐
	Isn't the D/G signal terminal loose?	Check the wiring for AnyWire DB A20.	☐
	Isn't the D/G signal line disconnected?	Check the wiring for AnyWire DB A20.	☐
The ALM LED on the NZ2AW1C2D2 is on.	Isn't the D/G signal line disconnected?	Check the wiring for AnyWire DB A20.	☐
	At the startup, was the automatic address detection operated correctly?	Check the status of the slave module and the wiring of AnyWire DB A20, and perform the automatic address detection.	☐
	Aren't the screws on the terminal block loose?	Check the wiring for AnyWire DB A20.	☐
The ALM LED on the NZ2AW1C2D2 is flashing slowly*1.	Is the DP/DN signal line short-circuited?	Check the wiring for AnyWire DB A20.	☐
	Aren't the cables connected to the D and 24V terminals in contact?	Check the wiring for AnyWire DB A20.	☐
The ALM LED on the NZ2AW1C2D2 is flashing rapidly*2.	Is 24VDC power being supplied to the NZ2AW1C2D2? Isn't the voltage too low?	Check the power voltage. Check the wiring for AnyWire DB A20.	☐

*1 "Slow flashing": at approximately one-second intervals.
*2 "Rapid flashing": at approximately 0.2-second intervals.

Memo

REVISIONS

*The manual number is given on the bottom left of the back cover.

Print date	*Manual number	Revision
June 2011	SH(NA)-080993ENG-A	First edition

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WARRANTY

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1. Gratis Warranty Term and Gratis Warranty Range

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[Gratis Warranty Term]
The gratis warranty term of the product shall be for one year after the date of purchase or delivery to a designated place.
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[Gratis Warranty Range]

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CC-Link–AnyWire DB A20 Bridge Module
User's Manual

Anywire Corporation http://www.anywire.jp

MODEL	NZ2AW1C2D2-U-E
MODEL CODE	13JZ62
SH(NA)-080993ENG-A(1106)MEE	

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